

Industrial Security

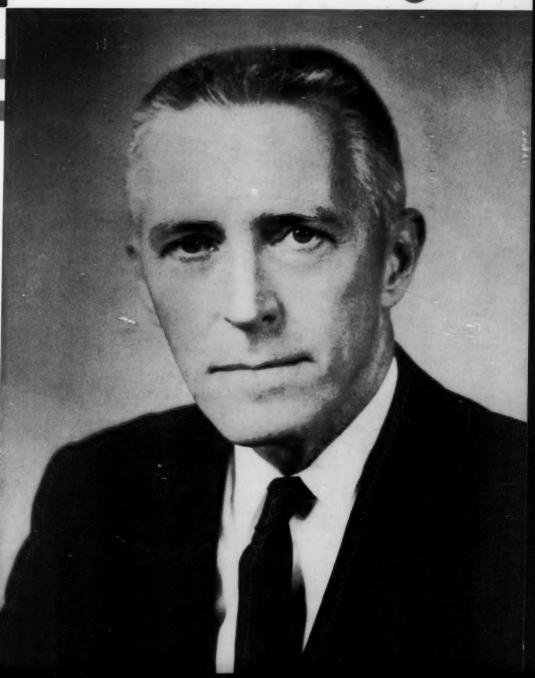
JULY, 1960

Vol. 4, No. 3

Leo. A. Hoegh Director, OCDM

OF THE

American Society
for
Industrial Security



EXECUTIVE OFFICE OF THE PRESIDENT

OFFICE OF CIVIL AND DEFENSE MOBILIZATION
WASHINGTON 25, D. C.

OFFICE OF THE DIRECTOR

June 8, 1960

To Members of the American Society for Industrial Security:

Nonmilitary Defense is of particular interest to every professional in the industrial security field. National survival depends in large measure on industrial survival.

In any disaster, industry will always be confronted with the questions: What do we do first? How extensive is the damage? How do we reorganize? When can we get back into production? Where can we get power, transportation, communications? What substitute or replacement equipment is available? How should we reassign our surviving employees? How can we pay them?

How industry can answer such questions will depend on how well it has laid the ground work for minimizing the effects of attack. Preparations must be made to save the lives of employees and protect its plants and equipment, as well as planning for post attack management of remaining resources.

The cooperation of national industrial trade associations and professional organizations is essential to the success of the National Plan for Civil Defense and Defense Mobilization. Business and professional leaders look to their national organizations for guidance in a variety of activities, including industry defense and survival planning.

The American Society for Industrial Security is doing fine work in advising its members regarding the need for adequate nonmilitary defense. It is providing expert guidance and assistance in planning for industrial defense and survival. This is an outstanding example of private initiative in providing leadership and assistance to programs in the national interest. It is typical of what all national organizations must do to sustain a free nation.

Sincerely,

Leo A. Hoegh



Industrial Security

Vol. 4. No. 3

JULY, 1960

IN THIS ISSUE

The American Society for Industrial Security takes great pride in presenting in this one issue of their official publication, INDUSTRIAL SECURITY, a series of articles pertaining to various methods of planning and preparing for industrial defense and survival.

Although articles have been published in other issues of INDUSTRIAL SECURITY which describe disaster control and emergency planning programs in industry, all articles in this issue are devoted to this important aspect of the National Plan for Civil Defense and Defense Mobilization.

The measures taken within and among industrial plants to minimize the effects of enemy attack or great natural disasters are basic to assuring survival of industry and continuity of production.

Industrial survival and recovery can be assured only by careful planning. Here, in this one issue, are the opinions and experiences of leading industrial executives and government officials who are experts and specialists in the field of industrial nonmilitary defense planning.

The many articles in this one issue tell why and how industry should plan, as well as what many companies are now doing in preparing for industrial defense and survival. This issue, therefore, is a guide to all industrial security officials and emergency planners in preparing for civil defense and defense mobilization.

We are deeply grateful to the many authors who have made this issue possible. They have made an invaluable contribution toward assuring our survival as a free nation.

EDITOR

Statements of fact and opinion are made on the responsibility of the authors alone and do not imply an opinion on the part of the Editor, the Officers, or the membership of ASIS.

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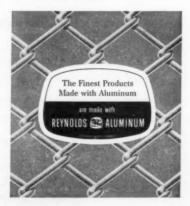


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"These are days of unique peril to civilian populations, to the security of our cities, our industries, and their peoples. The decisions this problem requires are difficult and involve inconvenience and expense. But the program for industrial defense may constitute the most valuable investment you can make toward assuring our survival as a free nation."

DWIGHT D. EISENHOWER
The White House





To The American Society for Industrial Security:

Civil Defense is a vital element in our total national defense. Civil Defense aims are identical to the military; to deter aggression, to protect our people and their fundamental values, institutions and culture. Throughout history, nations have relied on armed might as a primary means to attain such an objective. Today, however, both we and our potential enemies possess terribly destructive weapons that could inflict unprecedented losses on unprotected civilian populations in a matter of hours. Defense requirements in this nuclear age are total; they include not only the modern military forces which we have in being and positioned throughout the free world, but also the capability of our citizens to survive and recover from enemy assault. Speedy recovery, most certainly, is dependent upon adequate plans to meet the disaster of an attack. Total defense, therefore, is a subject which should have a very personal and universal interest to all Americans.

Military defense, civil defense and disaster control planning are essentials of total defense, and nothing less than total defense will suffice. Members of the American Society for Industrial Security can and must help to alert our entire industrial community to the disaster control requirements for total defense.

THOMAS S. GATES, JR.
The Secretary of Defense

The National Program for Survival and Continuity of Industry



By Virgil L. Couch
Director, Industry Office
Office of Civil & Defense Mobilization
Battle Creek, Michigan

In the Executive Office of the President, Mr. Couch is the Nation's top advisor on methods of planning and organizing for industrial survival in case of enemy attack or major natural disaster. Few men in the Nation today have his varied experience and background applicable to the key responsibility of civil defense in industry. For over 20 years as a Director of Personnel and Labor Relations, he has developed and supervised a great variety of emergency and disaster preparedness activities.

Upon the creation of the Federal Civil Defense Administration, he was appointed as the first Deputy Assistant Administrator for Management, and concurrently served as Personnel Director. He has successively served as Executive Officer of Training and Education, Director of the National Civil Defense Staff College and Training Center, Director of Field Exercises for Atomic Test Operations, and Director of Warden Services. His varied activities have given him the name "Mr. Industry Defense."

Before joining FCDA, he was the first Director of Personnel for the Economic Cooperation Administration and has served as Director of Personnel and Labor Relations for the Farm Security Administration and the Farmers Home Administration.

He began his government service in 1935, after five years of sales and executive management experience in the petroleum industry.

He is a graduate of the University of Kentucky with special study in factory and industrial management and graduate study in psychology, training, management, and personnel administration.

It is clear from the threat we face, our vulnerability to attack and the great destructiveness of modern weapons, that we cannot depend alone on the superiority of our Armed Forces to guarantee survival in case of war. We must face up to the reality that our country must be capable of cushioning the effects of an attack and absorbing losses and dislocations such as never before. We must be prepared here at home . . . in every state, city, industrial plant, farm and home . . . such as never before. Such preparation is a strong deterrent to war.

Should our efforts fail to preserve peace, recovery of the United States following a nuclear attack could depend in large measure on how thoroughly American industry has prepared to survive and to resume production.

Production everywhere depends on production somewhere else. Wreck one plant and production is stopped in another plant far away. There is no place to hide anything or anybody from all the effects of an attack. But we can protect both people and things and our ability to fight, by making plans in advance for disaster and disaster control . . . a plan for civil defense and defense mobilization, including a program for industrial survival.

It is my purpose in this article to outline briefly the general organizational and planning responsibilities of governments at all levels, and industry especially, in preparing for civil defense and defense mobilization.

Unquestionably, industry, its factories, and its workers would be a target of enemy bombers. Unless through

proper protective measures the effects of that first allout attack can be blunted, our key industrial concentrations could be crippled so badly that we might lose a war before production could be resumed. This means that industry must prepare to survive an attack—prepare for civil defense.

What Is Civil Defense?—An erroneous impression has gone forth that civil defense is an organization which is established separate from local government and that such organization would confront an emergency caused by enemy attack, only with an army of volunteers decked out in tin hats and civil defense arm bands. Nothing could be further from the truth.

The FCDA Act of 1950 defines the term "civil defense" as "... All those activities and measures designed or undertaken to minimize the effects upon the civilian population caused or which would be caused by an attack upon the United States ..."

All activities, therefore, which tend to "minimize the effects upon the civilian population caused or which would be caused by an attack upon the United States" are civil defense activities.

Civil defense—the only kind of civil defense that will pay off—concerns the responsibility of each level of government, of each industrial plant, and of every citizen to deal with emergencies as they arise. Suppose your home town were hit by a tornado, a flood, or some other form of natural disaster. The town fathers would not stand idle while squads of volunteers rushed helterskelter into the fray. Rather, the mayor, police chief and other officials would employ all of their resources

to cope with the situation. Of course, they would use volunteers . . . especially volunteers from industry who are trained in saving life and property. But, such volunteers would serve as auxiliaries to the departments of local government and under the direction of local government. They would be a part of local government.

And, if the disaster were big enough, your home town could expect help from the State and, if necessary, from all pertinent agencies of the Federal Government. That is government in emergency action—supported by the people and the total resources of the Nation. That is the only real form of civil defense.

THE ROLE OF GOVERNMENTS IN INDUSTRIAL SURVIVAL PLANNING

The Federal Government—The Director of the Office of Civil and Defense Mobilization is the President's chief assistant in directing the Federal Government's Civil Defense and Defense Mobilization activities. The OCDM provides standards and guidance on all phases of planning to minimize the effects of attack through advance planning for protection of life and property and mobilization and management of resources and production.

The National Plan—The Office of Civil and Defense Mobilization is responsible for developing and promoting a national plan for the protection of life and property in this country during an enemy attack or other major disaster conditions. Such a plan has been developed and promulgated by the President of the United States. It is entitled "The National Plan for Civil Defense and Defense Mobilization."

It is a single document which establishes non-military defense courses of action, and the role of the Federal Government, the States, their political subdivisions, industry, and of individual citizens in the event of an attack to enable the Nation to mobilize, survive, recover, and win.

It recognizes that differences between the free world and the communist world could require national actions to meet contingencies such as international tension, limited war, or general war.

Many industrial executives and government officials have had a hand in developing the Plan. The Director of the Office of Civil and Defense Mobilization, Leo A. Hoegh, has stated, "The National Plan has been developed through conferences with governors, mayors, State and local civil defense officials, advisory committees, and agencies of the Federal Government. It provides the Federal leadership, direction, coordination, and guidance necessary for an effective civil defense and defense mobilization in this Nation."

"The Plan projects the non-military defense of the Nation 10 years into the future. It emphasizes immedate survival under attack, and subsequent recovery. It anticipates progressive changes in weapons and in defenses against them."

"If war should come despite our efforts to secure peace, an effective application of this Plan will surely



The Honorable Leo A. Hoegh, Director, Office of Civil and Defense Mobilization, addresses industrial and business executives at the OCDM Staff College Course in Industry Defense and Mobilization.

save tens of millions of lives that could otherwise be lost."

Upon issuance of the National Plan for Civil Defense and Defense Mobilization, President Eisenhower stated, "It is the clear and unequivocal position of the United States that conflict and disagreement among nations should not be resolved by the use of force. The United States will continue through all available channels to attempt resolution of disagreements by all means that will allow peace with honor. Nevertheless, so long as direct or indirect aggression is used as an instrument of national policy by any nation, common prudence requires that every effort be made to protect the people of the United States by both active and passive means of defense. Civil Defense and Defense Mobilization are vital parts of the Nation's total defense."

Within the Plan it is made clear that industry has certain definite responsibilities in supporting the common defense, such as, "The leaders of industry, agriculture, labor and financial institutions are responsible, in cooperation with appropriate government agencies, for planning and executing measures designed to assure the continued functioning, or rapid restoration to functioning, of the essential elements of the national economy."

The National Program for Industrial Survival—The National Program for Industrial Survival is a vital part of the National Plan for Civil Defense and Defense Mobilization. It is designed to guide and assist industry in preparing for defense and continuity of production. It outlines procedures and methods, and designates responsibility of local and state governments, and federal agencies, as well as private organizations in protecting the Nation's industries.

Many industrial and governmental leaders have contributed to the development of the National Program for Industrial Survival. It was not developed in the proverbial "vacuum" or "ivory tower." Instead, it was

(Continued on page 130)

The Role of the Professional Security Director in Industrial Disaster Preparedness



By Eric L. Barr, Jr.

President, American Society for
Industrial Security

Mr. Barr, Industrial Security Manager at General Dynamics' Electric Boat Division in Groton, Connecticut since 1947, is President of the American Society for Industrial Security, and is a member of the ASIS Board of Directors. He has previously served as ASIS secretary and second vice president. He graduated from the U.S. Naval Academy.

A veteran submarine commander, he saw service as second in command and commanding officer in submarines in World War II and is credited with sinking twenty-two ships, damaging six, and capturing an island. He was awarded two Navy crosses, two silver stars, one bronze star, a letter of commendation, the Navy unit commendation, the Philippine Republic Presidential Unit Citation and eight submarine combat pins for successful war patrols. He retired from the Navy with the rank of Captain, and is the author of several booklets on industrial security. He has completed the Industrial Security Management Course of the Army Intelligence School; lectured in the Army Intelligence School; and served the Department of Defense on the Industry Advisory Committee on Safeguarding Classified Information. He is a member of the National Institute of Disaster Mobilization, the Security Subcommittee of the National Security Industrial Association and other organizations.

Professional industrial security officials at all levels of industrial management must provide leadership and assistance in developing and promoting the National Program for Industrial Survival.

While industrial survival planning is a job for the whole management team, the security director has an important role because his profession is concerned especially with safeguarding and securing employees, property and other corporate interests.

Security directors and supervisors who dedicate themselves to the protection of plant property, and the survival of employees have been presented with a problem of staggering magnitude by the creation of new weapons and the threat of attack. Along with the rest of the management team, they must use all their knowledge and skill in meeting this problem.

The American Society for Industrial Security was formed by and for professional security officials in industry and government to advance the development of industrial security. Many think of "industrial security" as only protection from espionage and sabotage by means of employee-loyalty investigations, safeguarding classified information, and physical protection of the plant with fences and guard forces. Actually the profession of industrial security includes all activities pertaining to the safeguarding of life, limb, property, information and production in industry. Emergency preparedness and disaster control is vital to such protection.

To achieve the objectives of industrial security requires complete preparedness for minimizing the effects of major emergencies and disasters such as: industrial accidents causing fires, panic, explosions, conflagrations; natural disasters resulting from floods, tornadoes, hurricanes, electrical storms; and enemy attack, either by direct military action or by sabotage.

The professional security director is vitally concerned with disaster preparedness as is his professional society, the American Society for Industrial Security. Our by-laws state that "industrial security" shall include and be synonymous with "disaster and emergency controls." Disaster preparedness is the responsibility of the security director. Preparedness for emergencies often averts disaster and always minimizes it.

Emergency and disaster preparedness includes control of emergency situations and disasters by planning that will minimize the loss of life, limb, property and information, maintain production as long as feasible, and restore production as quickly as possible.

Activities included in the field of emergency and disaster preparedness are many. They are included in the National Program for Industrial Survival which is a vital part of the National Plan for Civil Defense and Defense Mobilization.

The steps to emergency and disaster preparedness and industrial survival consist of: Establish liaison with local, state and national civil defense officials, other departments of government and other industry for assistance and mutual aid. Establish company and plant leadership responsibility for disaster preparedness. Organize and train employees for the emergency services. Train employees in survival procedures. Establish a plant warning and communications system. Establish a central control station. Develop an emergency shutdown procedure. Develop an evacuation plan. Develop

(Continued on page 138)

The ASIS Program for Emergency and Disaster Control



By Irvin E. Hibbs
Chairman, Emergency and Disaster
Planning Committee
American Society for
Industrial Security

Mr. Hibbs has been Chief of Plant Protection for the American Synthetic Rubber Corporation, Louisville, Kentucky, since 1952 and is Commander of the Third

Mobile Group, Kentucky Civil Defense. In addition he has assisted in developing the Operational Survival Plan for the State of Kentucky. He has served as Lecturer and Instructor of Civil Defense Planning in several subjects, such as Emergency Planning in Industry, Emergency Traffic Control, and Evacuation, for Louisville Division of Police, Kentucky State Police, and University of Louisville Police Academy, and has conducted several seminars on Plant Security, Mutual Aid, and Fire Prevention. He is chairman of the Louisville chapter Emergency and Disaster Planning committee of ASIS. He is Chairman of the Program Committee, American Society of Safety Engineers; Member of the Alumni Southern Police Institute; Member of the President and Governors Traffic Safety Committees; Chairman of Industrial Committee on Fire Prevention, Louisville Fire Prevention Council; Former Secretary and Associate Editor of Louisville and Kentucky Police Officers Associations.

The constitution and by-laws of the American Society for Industrial Security emphasize that the primary purpose of the ASIS is to improve the professional knowledge of its members by encouraging and promoting the voluntary interchange among members, of data, information, experience, ideas, knowledge, methods, and techniques relating to the field of industrial security.

It is clear that emergency and disaster control planning is synonymous with industrial security.

In order to improve the professional knowledge of ASIS members by providing practical information to members in the field of "disaster or emergency planning and controls" and to comply with the by-laws, the Society has taken some very positive steps, such as:

1. A National Committee on Disaster and Emergency Planning was appointed to (1) maintain liaison with government agencies and other organizations concerned with various aspects of emergency and disaster planning including nonmilitary defense; (2) inform members regarding programs and various methods of preparing for disaster; (3) provide an exchange of ideas and experiences relating to disaster and emergency activities among industries; (4) assist and support the Federal Government in developing and promoting programs related to National Security, Civil Defense, and Defense Mobilization; and (5) encourage and assist ASIS Chapters in cooperating with State and local governments in emergency and disaster preparedness programs and activities. It has been a special honor and privilege to me to serve as Chairman of this Committee.* The Board sponsor for this Committee is Mr. Kenneth E. Yandell, who formerly served as Committee Chairman.

- The subject of disaster planning has been included on the program agenda for all national conventions and seminars of the Society.
- Articles have been published in Industrial Security
 magazine, official publication of the ASIS, containing information regarding methods and techniques of disaster and defense preparedness as
 well as descriptions of disaster preparedness activities in a variety of industries.
- 4. This issue of *Industrial Security* is another landmark in the history and progress of the Society. It is one method for exchanging ideas and experiences and will answer the questions of industrial security directors regarding (a) why prepare for disaster and nonmilitary defense; (b) what steps should be taken in such planning; (c) how to develop certain plans and programs and (d) what

(Continued on page 138)

Over seventy companies have been given special assistance by the committee during the past six months, in developing emergency and disaster plans.

^{*} Other members of the Committee are: Ralph A. Price, Security Consultant, Oxford Paper Company and Special Assistant to the State Director of Civil Defense, Rumford, Maine; Arthur J. Hogan, Security Specialist, U.S.A. Ordnance Missile Command, Huntsville, Alabama; John J. Molloy, Jr., Chief of Industrial Security, Astrodyne, Inc., McGregor, Texas; James A. Reeder, Chief Industrial Security Field Office, Second U.S. Army, Philadelphia, Pa.

Effects of Attack by Nuclear Weapons



By Robert L. Corsbie
Deputy Assistant Director for
Radiation Protection
Division of Biology and Medicine
U. S. Atomic Energy Commission
Washington, D. C.

Since 1951, Mr. Corsbie has been a member of the staff of the Atomic Energy Commission, and is an internationally-recognized authority in the field of nuclear weapons effects. Among other activities the Branch he serves in is responsible for civil defense liaison with the Office of Civil and Defense Mobilization. He has also served as the Director, Civil Effects Test Operations, since 1953. In that position he has directed an extensive program of technical and scientific experiments conducted in the detonations of more than 100 nuclear devices during the weapons test series at the Nevada Test Site. Among these experiments have been the civil defense sponsored technical projects. His experience with the effects of nuclear weapons began in 1942 when he conducted courses for architects and engineers at New York University. He was an officer in the U.S. Navy serving as Executive Officer, Physical Damage Survey Team, at Hiroshima, Japan, and editor of the official reports on blast and thermal damage. As architect for the New York Central Railroad Company, he designed the Central Union Station complex at Toledo,

During World War II, heavy damage was caused in many cities, thousands of civilians were killed, and millions were made homeless through the use of conventional type weapons (high explosive and incendiaries). Present day capabilities to wage war have increased tremendously and the explosive power of nuclear weapons completely dwarfs that of the largest bombs used during the last World War. New disease-producing weapons and poison gases are entering the picture. In addition, the effects of some present day weapons of war may remain quite dangerous long after the attack.

It has been stated by our National leaders that a potential enemy now has the capabilities to attack this nation from the air, by off-shore attack methods and by sabotage. It is assumed that he has a choice of weapons: high explosive, incendiary, chemical, biological and nuclear.

Under conditions of heavy nuclear attack, an extremely serious survival problem would develop in the absence of fallout shelter, or high-grade home refuge equipped with essential survival items.

To prepare against the effects of enemy attack, the American people must have knowledge of enemy capabilities, his weapons and their effects on living things—man, plant, animal, and material objects. This is basic for protection against weapons effects. Training and education are required with diligence in both.

The effects of attack on this nation with all types of modern weapons is almost beyond the possibility of human imagination. For purposes of this article, we will discuss only the effects of attack by nuclear weapons.

For the last ten years I have spent most of my time on work associated with the planning and supervision of research and field test programs. These programs have been conducted to get information on the effects of nuclear explosions which will lead us to practical rules for understanding the hazards and deciding on ways and means for protection.

Although most of the fundamental field work was performed at the time of the weapons test in the Pacific and in Nevada, I think it is important to recognize that many people put in many long days and nights and many hours in the laboratories to learn how to save lives. The weapons developments and the tests in particular are more spectacular and have drawn greater public attention and the spotlight. But a serious group of scientists have been working every bit as hard to assemble the data which enables us to speak affirmatively with some confidence when a man asks: Is there hope for survival?

My first experience in the study of weapons effects came 15 years ago when I was an officer in the Navy. In 1945 I was assigned to the group which conducted the U. S. Strategic Bombing Survey at Hiroshima and Nagasaki.

At that time we had a nuclear monopoly, and there was a certain feeling of assurance in the knowledge that the United States was the only nation with an atomic bomb. But it wasn't to last. It has always been the history with innovations and inventions—if it's worth making, someone will find a way. And as we know, other nations set about developing nuclear weapons. Paralleling events in many other technologies, the last 15 years have been a period of far-reaching developments in nuclear weapons.

During the 1950's we demonstrated that very large and very small nuclear weapons could be made. We once talked principally about nominal yield weapons; that is, weapons having an energy release equivalent to 20,000 tons of TNT. Now we know of yields far less than nominal suited to tactical use on the battlefield or in an air battle. More important to the purpose of this paper, we also know that the yields have gone up into the millions of tons and that such weapons can be delivered by the modern vehicles of war.

It is the latter class—the big weapons with yields in the megaton range—toward which our attention is directed when strategic employment is considered as in an attack on a Nation. Perhaps this Nation. I do not believe that we approach hopeless conditions in the event of an attack. However, those of you who may be stimulated to read a little more about the potentialities of such an attack will gain new and stronger reasons for hoping that something worthwhile comes of the disarmament conference in Geneva.

When you start to read about nuclear weapons, you will discover there is the 500 page book entitled "Effects of Nuclear Weapons" published in 1957 as the result of a joint program of the Department of Defense and the Atomic Energy Commission. Several hundred thousand copies of this book have been printed, and this is a tremendous number for a technical book. It has also been translated into five foreign languages. A more recent issuance is the 900 page "Hearings on the Biological and Environmental Effects of Nuclear War" published by the Congress to give the testimony received before a Subcommittee of the Joint Committee on Atomic Energy during 1959.

Between these two books one can develop a sound understanding of the subject if he can only find the time for reading and study. Most busy men and women find this no small problem. There is so much of importance and consequence to be learned in the world today for pleasure, for business, and for what we might call good citizenship. As many a hardpressed student has thought during final examinations: How wonderful it would be if we could learn by simply taking a pill.

In a short article I can only give you a sort of nuclear pill. It is a summation that I hope will give you the essential basic information on nuclear explosions. I also hope that this condensation will stir you to look deeper into the subject.

To begin with I assume that everyone knows that the United States, Great Britain and the Soviet Union have detonated nuclear devices having yields in the megaton range and that France has detonated two devices in the kiloton range. So there are the existing capabilities.

When a nuclear weapon is detonated on the surface or in the air, there is an intensely brilliant burst of light far brighter than the brightest desert sun. Then a ball of fire grows and rises into the air.

If the explosion is that of a nominal yield weapon; that is, equivalent to about 20,000 tons of TNT, the fireball will persist for just a little more than a few seconds. Fireballs from explosions in the *megaton* range can be seen for many seconds.

As the fireball rises the familiar mushroom cloud forms rising to about 35,000 feet for a nominal yield and to twice that altitude and more in case of megaton yields.

Unlike conventional high-explosive weapons, which produce blast and heat only, nuclear weapons generate three basic effects. These are: Blast (shock); Thermal (heat); Nuclear radiation. The third effect may be separated into two parts—initial and residual radiation.

Blast is a high pressure wave which proceeds radially from the surface of the fireball. Although the blast wave travels very rapidly at first, it soon slows down to about

the speed of sound which travels at around 1100 feet per second.

Five pounds per square inch is the blast pressure at which we can expect serious casualties to unprotected personnel. You may have seen automatic camera films of test houses being blown apart at about 5 pounds per square inch. One pound per square inch is the pressure range at which window glass will shatter and become missiles; doors may be blown off and some roofing and gutters will be lost.

A system has been devised for identifying the area of comparative blast damage from a nuclear explosion:

- Ground Zero, the point of impact of a ground burst and a point directly below the center of the explosition of an air burst.
- A-ring, a circular area of almost complete destruction and 100% casualties.
- B-ring, a circular area outside the A-ring, of severe damage, heavy casualties, buildings beyond repair.
- C-ring, a circular area outside the B-ring, of severe to moderate damage, lower casualty rate, buildings repairable, though not during occupancy.
- D-ring, a circular area outside the C-ring, partial to light damage and about 18% of the people injured if unprepared and unprotected.

It must be kept in mind that the extent or radii of the A, B, C, and D-rings respectively from ground zero depends basically on the size of the weapons. The relationship, however, is not in direct proportion. Twice the weapon does not bring twice the devastation. These blast damage radii vary roughly with the cube root of the energy release of the bomb. For identification, the Hiroshima and Nagasaki bombs were labelled as 1-X bombs. They each had an energy equivalent of about 20,000 tons of TNT. Weapons may be identified as 1-X, 8-X, etc., in relation to the Nagasaki-Hiroshima bombs. The larger weapons are identified in terms of millions of tons of TNT equivalent, or in megatons. A 50X bomb and a 1-megaton bomb are the same. Some comparisons of the effects of weapons of various sizes are as follows:

Weapon	Radii in Miles (Rings)			
	A	\boldsymbol{B}	C	D
1X (20 Kilotons)	1/2	1	11/2	2
8X (160 Kilotons)	1	2	3	4
50X (1-Megaton)	1.8	3.7	5.5	7.4
5 Megaton	3.1	4.4	6.9	9.4
20 Megaton	5	10	15	20

Note: (1X = 20,000 tons TNT)

(1 Megaton = 1,000,000 tons TNT)

The light emitted by the ball of fire is known as *thermal* radiation. The infra-red component of the thermal radiation can cause burns and start fires at somewhat surprising ranges.

Also at the time of the explosion there is a large energetic burst of ionizing radiation which we may think of (Continued on page 14)



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Effects of Attack

(Continued from page 12)



A typical rescue team, trained, equipped and ready for emergencies at Weirton Steel Co., Weirton, West Virginia. Fifteen teams are located in the plant area, and 20 other teams trained by the company are stationed throughout the county.

in a simplified manner as consisting of gamma radiation and neutrons.

Both the thermal radiation and the ionizing radiation travel with the speed of light: 186,000 miles per second.

I would like to add some information on the thermal radiation or the light radiated by the explosion. During the years when we were conducting weapons tests, safety measures were taken by the AEC before shot time to prevent accidental eye injury by the flash of the explosion. Those who intended to observe the detonation either wore high density goggles or faced away from the point of detonation for the first few seconds until the fireball was less radiant.

The possibility of eye injury because of the flash at the time of detonation deserves attention within the context of nonmilitary defense. The matter of range is very much to be taken into account.

During the high altitude experiments above Johnston Island in July and August 1958 it was demonstrated that the thermal radiation from a megaton explosion occurring at 100,000 feet and higher could cause eye injury at great distances. Small burn lesions were produced in the eyes of rabbits 345 miles away, or over an area of 374,000 square miles.

A very high altitude nuclear explosion delivers a great percentage of its thermal energy in about one tenth of a second after the detonation. As a consequence of this, nearly all of the radiant energy is received by the retina before the eye can be protected by blinking if a person is looking directly at the burst at the time of detonation. This is in contrast to the low altitude detonation of the same yield where the delivery of the thermal energy is slower and where the automatic blinking of the eye provides a measure of protection.

During an attack or an air battle there may be a number of opportunities for nuclear detonations to occur around and about populated areas at unexpected times. If people are "watching the show," they will be increasing their risk. This means then, that unless we are wearing high density goggles, we must not look around curiously if something starts to happen. The need to have a shelter and to get to it is thus reinforced.

In considering your individual needs and responsibilities for protection, you must not overlook the requirements levied by secondary effects of the explosion. You will, of course, consider the probabilities of power and communication failures. Certainly you must take into account casualties and damage from flying debris and fires. In both Hiroshima and Nagasaki vast areas burned to the ground, and there is no reason to believe that this may not recur.

The third effect, from nuclear weapons, in addition to the previously discussed Blast and Heat, is nuclear radiation. Radiation takes on two forms: (1) Initial radiation which occurs at the time of the bomb burst. (2) Residual radiation including fallout.

The initial radiation from a large nuclear bomb-burst on or near the ground, is generally considered no serious hazard beyond the areas of severe damage caused by heat and blast. However, the possibility of the use of smaller atomic bombs delivered by aircraft, intercontinental ballistic missiles, submarines or surface vessels, saboteurs or other clandestine means cannot be overlooked. It is estimated that about 10 to 15% of the casualties in Hiroshima were from initial nuclear radiation. Shielding of almost any type, and a greater distance from ground zero, could have prevented many of the casualties which were caused by both nuclear and thermal radiation at Hiroshima.

The appreciation of the residual effects expanded many fold in 1954 and subsequently. In that year, during Operation CASTLE in the Pacific, through vagaries of wind and weather and a shot code-named BRAVO, island populations were contaminated and we became acutely aware of an increased radioactive fallout hazard.

We have been living with fallout ever since. Considerations of world-wide fallout as you know had an important influence in the thinking which led to the moratorium on weapons tests. Because of the large area which may be contaminated to a casualty-producing level from a weapon delivered in anger, fallout has received most of the attention in matters of public protection.

So much attention has been given to fallout, and there has been such wide discussion of its phenomenology, that the initial effects seem to have been crowded out of the picture. My personal conviction is that we must keep looking at all of the effects. Those of us who feel this way were gratified to observe during the Congressional Hearings on the Biological and Environmental Effects of Nuclear War last June that the destructive initial effects received as thorough treatment as the residual effects.

The residual radiation hazard—as I have said earlier—is something which has received a tremendous amount of attention since 1954. Actually the problem was not completely new even then because the radioactive mate-

rials result mainly from the fission reaction, and the fission reaction is what makes the bomb go. These fission products, as they are called, are bomb residues.

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Another source of residual nuclear radiation is the activity induced by neutrons captured in various elements found in the earth, the sea, or in other substances present at the time of detonation. Radioactivity induced by gamma rays is either insignificant or completely absent.

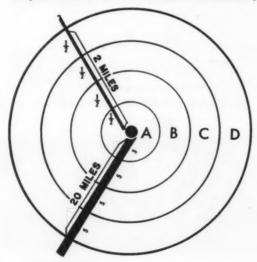
Thus, our attention focuses on the fission products from the bomb itself and the activation of other elements in the environment by neutrons from the bomb.

With the high-yield weapons the principal question from the view point of protecting people against high radiation doses is: Where does the radioactive material go? If the fireball touches the surface of the earth we know that millions of tons of earth may be drawn up and that the fission products will condense on the particles of earth.

In a matter of minutes these particles will commence to fall and begin to deposit the radioactive ele-

ZONES OF DAMAGE FROM BLAST

20 KT (20,000 TONS OF TNT) (Air Burst)



20 MT

(20,000,000 TONS OF TNT)

Radii of Damage Circles

depend on size of Bomb

A 20-megaton H-Bomb—air burst—would result in the following damage: Damage Diameter-Miles Square Miles Ring A Total 10 80 20 230 Severe B Moderate 30 390 C 40 550 Partial D

ments on the ground in a rough circle around the point of detonation under the mushroom cloud and then downwind. Downwind in this case means along the resultant direction of the high altitude winds through which the fallout particles drop on their way to earth from altitudes such as 70,000 feet or more. We would normally expect to find the rough circle upwind and crosswind around the point of detonation and a path of irregular width extending downwind so intensely radioactive even at ranges of 100 to 150 miles that unprotected personnel are almost certain to become casualties.

If the explosion does not occur so that large amounts of earth are drawn up into the fireball, we should not expect to have the same deposition of local fallout and the hazard should be considerably less. But even in this circumstance we may have a residual radiation problem because of neutron activation.

The area within which neutron activation may cause a residual radiation hazard will also suffer heavy damage from blast and thermal effects. Casualties among unprotected personnel will be numerous and severe. The total area involved will be much smaller than with the fallout case.

We see then that the explosion of a nuclear weapon presents a grim collection of initial and residual hazards. These hazards can affect large areas yet I think it incautious to lay plans on the assumption that an important target will experience but a single explosion—World War II evidence to the contrary. Certainly in the case of fallout we should expect that there will be a layering of radioactive material in regions with numerous important targets. And except under somewhat unusual conditions we no longer have the assurance that the out of the way village or town is out of the battle. Neither is there any written guarantee that any modern war will be over in one day or two or three.

Fortunately there are some constructive things which can be done to protect ourselves from these effects; and as we see it, they have to be done if we are to survive a war.

But before we talk about palliatives and remedies for nuclear war lets examine the risks in our everyday life. The reason for suggesting this approach is that I find people who do not react well to LD50 concepts. LD50, as you know, means that a lethal dose of an effect is predicted for 50% of those exposed to it. There are LD50s for ionizing radiation, for blast and for thermal burns.

Unfortunately, LD50 concepts do afford a convenient out for anyone who prefers the status quo in day-to-day arrangements of his personal life and therefore, can conclude that he is either in the 50% dead or 50% alive. So, why do anything about it? I think it is much better to start with a threshold effect which is comparable in risk to our daily activities such as driving an automobile through traffic, walking across a busy thoroughfare or keeping the house from burning down.

For instance, if we agreed that one psi blast pressure (Continued on page 140)





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Sabotage and Espionage in American Industry



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By Paul Hansen
Director, Industrial Security
Reynolds Metals Company
Richmond, Virginia

Mr. Hansen has a wide background in investigation and security, both in government and private fields. A law graduate of the National University Law School, Washington, D.C., he has been a special agent with the FBI, a regional Agent-in-Charge for the Federal Works Agency, and attorney and Director of Security for Vultee Aircraft Corporation. He is a past member of the National Defense Committee, U.S. Chamber of Commerce, Industry Advisory Committee on Safeguarding Classified Information, Department of Defense and the Citizens Advisory Committee to the Commission on Government Security. He served as the first President, and Chairman of the Board and is credited with being the founder of the American Society for Industrial Security. He is now serving as a Director and member of the Executive Committee of ASIS. He is guest lecturer at the OCDM Staff College Course in Industry Defense and Mobilization and many Industrial Security and Industry Survival Conferences throughout the

Sabotage and Espionage are means of enemy attack. Attack by Sabotage and Espionage in American Industry is a subject vital to every citizen who is concerned with the security of the Nation. And yet, it is replete with contradictions, in that although we recognize that the Soviets are actively engaged in espionage in American industry and that the danger of sabotage is ever present, as a people we are unrealistic enough to pretend that it is not so. Pretending that it is not so, we choose to ignore it for the most part by refusing to do anything too positive about it. To me, this is an enigma, and a luxury we in present-day America can ill afford.

The touchstone of our problem is the activity of the U.S.S.R., both as a competitive state and as the hub of a universal and militant social philosophy. We seek to try to equate this in our own minds by declaring that it is only a consequence of the Communist Doctrine. We refuse to recognize that it is a manifestation of a far deeper urge which is historically Russian and which, from Peter the Great, has been some 300 years in developing to its present state.

It was in 1842 that Jan Kollar, a leading Pan-Slav, wrote his great prophetic poem, "Slavia's Daughter." He proclaimed that within a century Slavic life would inundate all, expanding its influence everywhere, that the Slavic tongue would resound in Europe's palaces and that the sciences would flow in Slavic moulds. He concluded by saying:

"The styles, the customs, and songs of our people Will be mighty, alike on the Seine and the Elbe."

One hundred and eighteen years have elapsed, since these words were honed in this visionary's mind, and they have not, as a prophecy, fallen far short of the mark! Our concern is now, not only for the Elbe and the Seine, but for the Ohio, the Mississippi, the Columbia, and the St. Lawrence as well; for sciences are being moulded in Slavic forms and the Russian language is now becoming a requisite for the educated man of the western world. And yet, most of America is both complacent and unready to react in a positive way to this challenge. We remain concerned with form and diplomacy and ethics—we will not be activated by the harsh necessity for self-preservation.

We must realize that Communist thinking does not recognize conventional rules. Its goals are total goals involving the literal obliteration of all democratic forms of government and the complete subjugation of the entire world to Communism. As in war, every Soviet activity designed to achieve final triumph is recognized as justifiable, whether it involves the tactics of unlimited duplicity, the shock action of scientifically studied revolutionary propaganda, or the calculated sabotage of the industrial base from which the attacked nation draws its subsistence.

It is imperative that the American people face the reality that we are already at war with the U.S.S.R. This so-called "cold war" is a life and death struggle between two ideologies, the United States occupying the number one position on one side of that struggle. A crucial part of the Soviet strategy in this cold war is a world-wide system of espionage, an integral part of which is now operating in the United States. This is the form of attack with which we are presently confronted. It has as its corollary a probable nation-wide campaign of sabotage. The advanced echelons of this attack include not only aliens but our own citizens as well.

Lieutenant General Arthur G. Trudeau, Chief of Research and Development, Department of the Army, in speaking to the convention of American Society for Industrial Security in Washington, stressed the importance of security in industry to our struggle for survival. He emphasized that we must not accept any risk that our industrial base be jeopardized. Speaking of the



The power control center of a large plant is a vulnerable area for a potential saboteur.

menace of Russian agents, General Trudeau, formerly intelligence chief of the Army, said, "I say without fear of contradiction, that the advanced state of Soviet technology today is due more to Soviet success in espionage and subversion than it is to their scientific apparatus, good as it is."

"We are," he continued, "suffering from a degree of complacency that is pitiful to observe. . . . Their intelligence and counterintelligence . . . is practically on a wartime basis, and their espionage, particularly their industrial espionage, is rated as superior by our own intelligence professionals." He said, "I wish I could speak out even more strongly on this subject, using recent cases we know of . . . but I am unable to do so in a public address at this time."

Special weight should be given to the words of General Trudeau. He is one of a handful of persons in this country with the most complete information available concerning the major technical and scientific problems in the military weapons field, of Soviet attainments in that field, and of the position of the United States vis-a-vis the Soviet Union in weapons development. Furthermore, General Trudeau, before succeeding General Gavin to his present post in April 1958, had been assistant chief of staff, Intelligence (G-2), the highest ranking intelligence officer of the U. S. Army and, as such, was in position to know more about Soviet espionage in this country—and other nations, too—than all but a few other of this nation's top security officials.

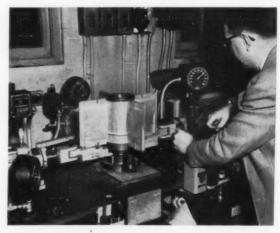
William B. Ziff, in his book, "Two Worlds," underscores in detail the observations of the professional soldier as to the necessity of a secure industry to modern warfare. He says, "The Army and the nation in modern war are no longer separate, but identical. . . . It is in the organized civilian economy of the nation, its laboratories, mines, farms, factories, universities, foundries and workshops, that the real war-making machine will be created. . . .

"Reliable knowledge of competitor operations will tend to become one of the absolute factors of decision in atomic warfare. This makes necessary an intelligence function in brackets far beyond anything previously conceived. All installations of the potential enemy will be mapped in complete detail, and his slightest acts recorded for study. . . . The intelligence pipelines will function in every echelon of enemy activity so as to give full working knowledge of every facet of his existence."

The Central Committee of the Communist Party is already well served by its agents, its apparatus and its diplomats in these respects in the United States. Let us consider specifically a few of the details of Soviet espionage activities in American industry and how they are perpetrated.

Major Andrew J. Kukucka, of the Department of Counterintelligence, United States Army Intelligence School, Fort Holabird, Maryland, also spoke to members of American Society for Industrial Security regarding Soviet penetration into the United States and its industrial base. He said, in substance, that the development of an informant network is important to any espionage mission and that the Soviets have four methods by which this can be accomplished. These methods are:

- Through subversion. Communist sympathizers are selected and put in touch with undercover agents usually operating from one of the Soviet Consulates in the United States. Sympathizers are selected because of their social standing, education, and professional skills.
- 2. By penetration into priority targets within the fields of science, government and sensitive industry. A skilled laborer, who might, for instance, be a Czech, Pole, or Hungarian, is selected from some small village to become a Communist agent. He is trained in espionage and subsequently pretends to be a rabid anti-Communist. He mingles with those who are known anti-Communists and helps some of them escape to the American Zone. When he later escapes to the American Zone those



Espionage agents who have access to strategic areas of a plant may collect intelligence information of inestimable value to the enemy. The resultant careless loss of defense information in this manner is a waste of efforts and funds which have been expended for security.

whom he has helped will innocently support his contention of being an anti-Communist, and he may be given a clear security rating, and allowed to immigrate to the United States. Upon arrival in the United States he may become employed by some sensitive industry because of his experience in a given skill.

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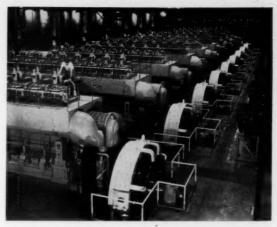
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These are the agents for whom our industrial security officers must be constantly on the watch. These agents utilize both witting and unwitting sources of information and it is these potential sources of information who must be given continual security orientation. Dangers of this sort must be constantly emphasized in security lectures to industrial personnel employed in sensitive areas. Only through this means can we make our loyal employees realize the dangers of subversive and espionage elements around them.

- 3. Use of undercover agents who may arrive in the United States illegally. They may be aided in this country by the Communist Party. This type agent works alone. He only makes clandestine contact when in need of funds. His mission is to get pictures, sketches and biographic data concerning major industrial centers or military installations.
- 4. Use of an overt intelligence agent. He is one usually assigned to a diplomatic mission or delegation. He may be assigned to the United Nations Assembly, the Soviet Embassy in Washington, TASS International Soviet Newspaper Service, or farm or other delegations. This type agent will travel around the United States as much as he can. He will make efforts to visit industrial centers and sites. All he wants to do is observe daily activity. By seemingly innocent observation he can determine many items of intelligence interest.



Another furnace was located in the extreme left of the picture before an explosion which killed several persons. A disloyal employee could apply one of many simple methods to cause an explosion resulting in such serious damage to life and property. Some plants have such sensitive control areas that an explosion could put the entire plant down for several months.



Access to the motor room where power is generated for an important defense plant would be a haven for a saboteur, or an employee of unknown background who may be influenced to commit sabotage.

Coupled with the comments of Major Kukucka, let us turn to the annual report for the year 1958 of the House Committee on Un-American Activities and see more of the details and methods of Soviet espionage activity in America and in American industry.

For years the party has used a formula in its efforts to gain control of labor unions by concentrating on basic industry, such as steel. Key factories and shops were the next step, and from there the plan evolved to key departments within the factories, and key people within the departments. The Committee took testimony at Gary, Indiana, during 1958, which revealed that some of the party members who were assigned to this task of infiltrating basic industry had concealed the fact that they had university training and that some had college degrees, in order that they could be assigned to menial jobs so that they could more effectively accomplish their deceitful and subversive mission.

The dedicated party members who are given prescribed missions in industry are identified as "colonizers." A colonizer was defined by the Committee as "... one that is directed by the Communist Party to teach and spread propaganda in order to cultivate the mass workers within a plant or industry or legitimate organization. He must use, in his tactics, methods of spreading confusion, agitation. Such attacks are to be made both legally and illegally. He has to be able to cope with existing situations—one moment being on the offensive and the other on the defensive—participating in open activities of mass agitation and propaganda while, at the same time, being capable of undertaking concealed activities which will obstruct and undermine public confidence in our foreign policy.

"However, the clear-cut danger of a colonizer is that he is a part of a vast network of secret party members, of potential saboteurs and espionage agents. The placement of these colonizers in key and basic industries is vital to the party from the standpoint of placing such colonizers in the position of promoting strikes, slowdowns, and so forth. In such concealed positions a colonizer, in the event of an emergency, becomes very effective to commit sabotage."

At Boston, Massachusetts, the Committee learned in grim detail of the techniques being employed by the Communist Party to further colonize and infiltrate the textile industry, and of their efforts toward colonization of all types of major industry. The textile industry has become a special target of the Communists, who are assigning "colonizers," propagandists, and agitators to further the party's aim of building its membership in the fast-growing industrial South.

A person who was in active contact with the Communist underground in its colonizing efforts described the stringent security measures exercised in the operation. Some members completely divorced themselves from the open apparatus of the party and in most instances completely separated themselves from their families. They assumed false identities, used various devices to alter their physical appearance and all contact with the open apparatus was handled through couriers.

In a previous report the Committee states categorically and significantly:

"Within the United States, the Communist apparatus has evolved new implements of political conquest. These have found root in, and have in turn contributed to, a dangerous climate of complacency which itself presents an acute threat to the very foundation of our security system. Communist political subversion, as disclosed by the Committee on Un-American Activities, presents a danger to the American people equaling that of Soviet satellites and long-range missiles. The Soviet Union would prefer to achieve its program of success without the physical destruction of its enemies; if the gates can be opened from within by dupes and Communist agents, overt aggression by the Soviet Union will obviously be unnecessary. This would be a fulfillment of Lenin's prophecy made at the inception of the international Communist empire. He said:

'First we will take Eastern Europe, then the masses of Asia, then we will encircle the United States, which will be the last bastion of capitalism. We will not have to attack. It will fall like an over-ripe fruit into our hands.'

"Notwithstanding the eruptions which have occurred in the Communist Party in the United States and the resignation of several key officials of the party, the Communist operation today presents a menace more serious than ever before.

"Reasonably, it may be asked, 'How is this possible?'
The principal reason is that:

"The Communist apparatus is employing new applications of its historical united-front program in which the Communists penetrate and obtain positions of influence in nominally non-Communist organizations whose programs they can exploit in pursuance of objectives desired by the Kremlin. These tactics accord with classic Communist doctrine."

Speaking of the ultimate immediate purpose of Communist political subversion, the Committee said:

". . . The clear objective of this campaign is the destruction of the entire security system of the United States. More immediately, it seeks to cripple the antisubversive campaigns of the executive department and the Congress, to shackle or abolish the Committee on Un-American Activities, and to discredit the FBI and its director, J. Edgar Hoover . . ."

"The Committee hearings highlighted the growing use of Communist techniques of colonization of industry by small cadres of highly trained disciplined party members."

The report is replete with accounts of Communist activities. In New Orleans, Louisiana, for example, there is the report concerning Communist efforts to control that vital seaport by infiltration and domination of waterfront and maritime unions. From New Haven, Connecticut, is the report of party involvement in infiltration of the United Electrical Workers Union at the Bridgeport Plant of the General Electric Company. From Baltimore, Maryland, evidence was taken to show that the Bethlehem Steel Plant at Sparrows Point is the focal point of Communist Party activity in that area. From San Francisco is included an account of the internal workings of the party in that city and an account of Communist propaganda of a foreign source entering the port of San Francisco-and its local dissemination. Hearings in Buffalo, New York, furnished additional evidence of Communist tactics in penetrating industry.

Mr. Francis E. Walters, chairman of the House Committee on Un-American Activities, issued a statement on July 21, 1959, regarding the return from Moscow last May of James E. Jackson, Jr., whom he described as "one of the top Communist conspirators operating in the United States." He said: "Jackson's orders from the Kremlin, which have now been transmitted to the comrades in the United States, are to intensify the training of key revolutionaries in sabotage, subversion and penetration."

J. Edgar Hoover, in his book, "Masters of Deceit," lists six areas of interest of Soviet espionage in the United States and refers to them as the "major areas of interest." Leading the list is "scientific research and development, with particular attention to atomic energy, missiles, radar defense, electronics, and aeronautics."

In the April 1959 issue of the FBI Law Enforcement Bulletin, Mr. Hoover addressed a letter to all law enforcement officials, and one paragraph of that letter is as follows:

"The danger of the national security should assuredly be evident in the feverish activities and spirited optimism of the Communist Party, USA. Foremost targets in the new offensive are labor groups and basic industries, including steel, shipping, automobiles, and transportation, with particular emphasis on railroads. Throughout the Nation, dedicated Party members are distributing the literature of Communist grist mills in an all-out effort to degrade the American economic

system, infiltrate labor organizations, and beguile workers into the camp of Communism."

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In a speech at Charleston, West Virginia, on June 16, 1959, Mr. Hoover stated: "Foremost in the present battle plans of the Communist Party, USA, are well-calculated efforts to embarrass the American economic system; to infiltrate and gain control in our labor organizations; and to secure footholds in basic American industries, such as transportation, manufacturing, communications and chemicals. Success of these Red objectives will be destruction for our way of life."

We are all familiar with the more notorious examples and proofs of the Soviet world-wide espionage operations. Only when Soviet spies are caught, however, can some degree of the magnitude of this activity become known. The Gouzenko exposure in Canada; the Elizabeth Bentley and Whittaker Chambers admissions in the United States; plus the discovery of the Fuchs-Rosenburg plot which stole the very secret of the A-bomb. More recently, we have noted the case of Colonel Able in Brooklyn; the Soble case in Manhattan; the "Black Knight" exposé in Great Britain and the radar-electronics espionage in Germany. These are only some of the instances that have come to public attention.

So it goes, the sordid, terrifying, unbelievable story of Soviet espionage activities in American industry and their espionage activities around the world. Yet facts are ignored and solutions are scarce; our people refuse to recognize that these activities constitute a real threat to the security of our country.

The problem we face today is no fantastic or imaginative problem; it is as real as the air we breathe. Consider the history of this problem: One hundred years ago, Communism was regarded as an impractical theory. Some forty years ago, at the time of the Bolshevik Revolution, Communism commanded eighty thousand followers. Today, it claims a total world membership of more than 33 million, with active party units located in 83 nations. It has already subjugated 17 countries with a population of over 900 million people, or about one-third of the population of the world.

The Soviets are not currently engaged in any program of sabotage in this country for the obvious reason that such overt attacks would not serve their purpose at this time. Such action would not be compatible with their current fallacious so-called "peaceful coexistence" program. We have had no direct experience of what a nationwide program of sabotage against us would be, as we have on espionage. However, with the continuity of the nation at stake we must be prepared for every contingency. We cannot afford to ignore the grim prospect that the Communists have a sabotage program that is organized and staffed with trained and experienced agents. It is undoubtedly perfected to the same degree of efficiency as their programs on espionage and propaganda. If we can use this line of reasoning as a fair yardstick to judge this potential danger, we can assume that should the cold war warm up to a shooting war between Russia and the United States, we may have unleashed

upon our government installations and industrial plants a program of sabotage such as we have never imagined.

Many take the position that the problem of the espionage agent and the saboteur in industry is wholly and completely a government matter. Some companies, even some large companies, persist in taking refuge behind this false screen. There is no question where the primary responsibility lies, and that is with the government. However, anyone who feels that he has a stake in democracy and our American way of life should have an interest in this problem and should accept some responsibility for it. Certainly our industrial companies and corporations, whether large or small, do have a big stake in democracy and should, therefore, assume a share of the responsibility in combating this menace.

Any steps which industry takes, as individual companies, to shore-up its own defenses in this area, would unquestionably be advantageous to its own self-interest. Certainly no segment of the free enterprise system stands to lose more in a downfall of the capitalist system than does the privately owned corporation or company. Industry might well consider and apply the following primary recommendations as a means of counteracting this rooted evil:

- Management should become better informed of this tremendous problem. They are in the vanguard of our struggle for survival, and a maxim of leadership has long been "know your enemy." They should undertake more adequately to discharge their responsibilities by giving this facet of their company's operations some of their own time and attention, for nothing spurs results in business like "the top man" displaying a keen interest in cause and effect, problem and solution.
- 2. Full-time professional industrial security managers should reappraise their own efforts and the operations of their departments in order to see whether they are doing everything they are capable of doing and everything they should be doing to give the maximum protection to their companies. These men should never be so concerned with government regulations, their own standard practices and the routine, stereotyped handling of their jobs, that they are unable to evaluate the effectiveness and worth of their own security programs.
- 3. Industrial security is one department of industry which deserves to be accorded professional status and more recognition. Everything must be done to assure that the industrial security supervisor, who is already helping to man the final outpost line before our nation's industrial heart, is competent, knowledgeable, resourceful and professional in the discharge of his job. This is not only an obligation he has to himself, it is a duty he owes his employer and it is a responsibility which events have thrust upon him as far as the nation is concerned. In the discharge of this responsibility

(Continued on page 139)

Determining Vulnerability of Your Plant to Attack



By Frank J. Keeler Vice President Chase-Manhattan Bank New York, New York

Mr. Keeler is a member of the Emergency and Disaster Preparedness Committee of the New York Clearing House Association and a Special Assistant to the Director of Civil Defense for New York City. For many years he has been active in public service. He is a member of the faculty of the New York City Police Academy and Assistant Director, Safety Services, New York Chapter, American Red Cross. He is a member and Charter Chairman, Lay Board of Trustees, Trinity College, Washington, D.C., and Treasurer, Association on American Indian Affairs. He is a guest lecturer at the OCDM Staff College Course in Industry Defense and Mobilization, and has lectured and conducted industry defense seminars at many industrial survival conferences, training schools, colleges, and universities throughout the Nation.

If war should come, is your plant a target? Are you located in a "target area?" How much should you do in preparing to survive an attack? These are only a few of the questions which must be answered before beginning the development of an industry defense plan.

In order to know the nature and extent of the work which must be done in planning, organizing, and training for civil defense, we must first know the nature of the hazards we face—our vulnerability to attack. We must know what conditions make the United States inviting and liable to an attack, as well as conditions which make our industrial plants, banks, and other facilities vulnerable to attack.

Likewise, in order to assess vulnerability to attack, it is necessary to know the capability of the enemy to penetrate the continental United States, type of weapons they can deliver, and the effects of these weapons on our population, industry, and other properties.

The first step therefore, in civil defense planning for each level of government and for each individual plant, bank, office building, institution, or other large facility, is to analyze and assess the vulnerability to attack of each plant and facility.

My purpose in this article is to tell some of the factors which must be considered in assessing plant vulnerability and describe some of the plans we have made at Chase Manhattan Bank.

While attending the OCDM Staff College Course in Industry Defense and Mobilization in Battle Creek, Michigan it was emphasized that because of heavy population concentration in the United States a relatively small number of nuclear detonations could bring a very high percentage of damage to population and industry under attack. Here are a few facts regarding assumed enemy targets and conditions which make the U. S. vulnerable, as related in the OCDM Industry Defense and Mobilization Course.

Targets—The potential enemy could attack a large number of targets within the United States. It is unlikely that every possible target would be attacked either in an initial nuclear assault or in subsequent attacks. However, neither the total number of intended targets nor the pattern of attack can be predicted.

Military bases of our nuclear retaliatory forces, other important military installations, and centers of government, industry, and population would be principal targets of nuclear attack. These target categories include: (1) Operational bases of the Strategic Air Command and installations of the Continental Air Defense Command, including civil and military airfields with major servicing and maintenance facilities and hardsurfaced runways at least 7,000 feet in length at mean sea level equivalent. (2) Major military command and control headquarters such as the Pentagon and headquarters of the North American Air Defense Command, Strategic Air Command, Continental Army Command, and Naval Sea Frontiers. (3) Major harbors, naval bases, and military supply depots. (4) Military installations on which major Army and Fleet Marine forces are stationed. (5) Standard Metropolitan Areas containing population concentrations of at least 150,000 inhabitants. (6) Areas with high concentrations of industry, Atomic Energy Commission production facilities, large and important dams, and major power, transportation, communications, and petroleum-handling facilities. Metropolitan Areas-The three principal regions of concentration of metropolitan population are the Atlantic seaboard, the lower Great Lakes and the Pacific coastal regions.

The Atlantic seaboard region is one continuous area, 600 miles long, stretching from Washington, D. C., to north of Boston, Massachusetts. In this region reside over 28 million persons in metropolitan areas. A motorist driving from Boston into Virginia will find a few lonely stretches of road, although he will seldom be in a county that is not part of a metropolitan area. Even

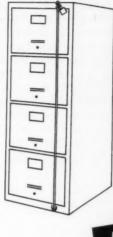
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Determining Vulnerability

(Continued from page 22)

before the turn of the century sociologists predicted that the entire eastern seaboard of the U. S. would some day be one continuous city. This concentration along the Atlantic makes the people vulnerable to attack by missiles from submarines, ICBM's and weapons carried by manned airplanes.

The metropolitan concentrations in the lower Great Lakes region contain over 34 million people, which are vulnerable to intermediate-range missiles from the sea or to ICBM's. As to the overall region, outstanding Public Administration authorities believe that a continuous urban sprawl will develop from New York City and Boston to Chicago and possibly to Kansas City. They foresee similar vast urbanized areas in the West; particularly along the Pacific. With such population concentration in the Lakes region, it can safely be assumed that an enemy would have no trouble finding a lucrative aiming area, within what amounts to one vast target.

These two metropolitan area regions of northeastern U. S. combined have a population of 62 million persons, which account for 41 percent or two-fifths of the total U. S. population. From a nonmilitary defense point of view in the United States, the problems of urbanization and urban spread are as important as any domestic problem confronting the Nation.

On the lower Pacific coastal region are over 9 million people vulnerable to missiles launched from submarines, ICBM's, and weapons delivered by planes.

Industrial or Manufacturing Areas—The heavy manufacturing or industrial areas are coextensive with the dense metropolitan population areas and dense county population regions.

Manufacturing in the U. S. is diverse, complex, and widely distributed. In the case of most products, the manufacturing process is shared by many plants, each specializing in one or more steps in fabrication, articles passing from one plant to another until the final product is ready for the ultimate consumer.

There is a close correlation between manufacturing areas and areas of dense metropolitan and county population.

Our productive resources tend to be concentrated in densely populated regions, and since our industries will be prime targets, this makes us vulnerable. For example:

- a. East of the Mississippi and north of the Ohio Rivers is an area containing 88 percent of our iron and steel production, 96 percent of our electrical equipment manufacturing plants, and 31 percent of the 50 most populous cities.
- b. More than half of the total population of the country lives in 70 "critical target areas" which include half of the industrial production but only 3 percent of the total area of the country. These are civilian target areas and do not include mili-

- tary targets, such as bomber bases and atomic energy installations.
- c. An attack on 10 of our most strategically-situated cities would encompass one third of our industrial workers and establishments, and reduce our transportation system to but a fraction of its normal capacity.

Upon examination of this industrial-economic data and the areas involved which are highly vulnerable not only to missiles and aircraft, but also to sabotage, one can immediately grasp their significance, not only to our economy, but to the war-carrying potential of the U. S. These areas are the backbone of production for items essential to conducting a war and to survival.

Both the Soo Locks (Sault Ste. Marie) and Panama Canal Locks are not only vital links to our economic and transportation capability, but also to the defense and self-protection of the U. S. These locks can be seriously damaged by sabotage, missiles, and planes, and thus are very vulnerable spots in the industrial capability of the U. S. The Soo Canal and Locks is the most important single inland canal in the world today.

Nature of U. S. Urban Building Construction—The materials used in construction of U. S. buildings, particularly homes, is such that they are highly combustible. The greatest danger associated with an enemy attack lies in the congested centers of U. S. cities and that danger is fire. Once a fire storm is under way, everything in the area will be burned out, regardless of how well built individual structures may be. Many who remain in shelters in the fire-storm area may be killed.

Public Capability for Emergency Operations—Unpreparedness invites attack by an enemy, whereas, preparedness of the public is a deterrent to attack. Preparedness of the populace, coupled with a strong military capability, a sound economy, and sufficient industrial production potential to wage a full-scale, all-out war are added deterrents to our enemies.

Our enemies would like to keep the emergency operations capability of our Nation at a low ebb. Another force that the enemy would like to see in operation in the U. S. is confusion concerning our civilian emergency operations capability. Apathy is an able ally of weakness. The prevalent ideas that the military can take care of our problems, or that if the enemy struck in force it would be useless to take any action tend to foster apathy. An enemy would also like us to think that we cannot dig deep enough or dig extensively enough to create adequate shelters for our population. This likewise creates apathy and is just the kind of thinking the enemy wants. If the country has the capacity to survive, recover, and reconstruct, it is less likely that any enemy will attack us.

Assessing Vulnerability of Individual Plants—All the factors which have been mentioned above must be taken into consideration in assessing our domestic vulnerability, and in evaluating vulnerability of individual plants, institutions, and other facilities. In analyzing and

assessing the vulnerability of individual industrial plants and other facilities, it should be kept in mind that industrial plants have *environmental*, *indigenous* and *economic* vulnerability. All must be considerd as bases for—(1) Estimating the likelihood that a plant or an industrial complex may be damaged, either by a direct hit on it, or by indirect effect of attack on another target. (Fallout is an example of such indirect effect.) (2) Making plans for protective measures to be taken within the purview of individual plants or of complexes of plants, to minimize damage and casualties, either from primary or from secondary effects of attack.

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A plant may be vulnerable because of *environmental* factors by: being a target *per se*; proximity to an identifiable target—another plant, a port facility, etc.; location within a city of 150,000 population; closeness (10 miles) to a metropolitan area of 150,000 population; probability of being in a high-density fallout area; adjacency to a military target ("SAC Base") or a critical AEC installation; being in a fire-storm area; or other vulnerability by virtue of location.

Plants may be vulnerable due to such *indigenous* and *internal* factors as: construction of insufficient strength; using processes or materials which would in themselves be hazards or which might, under attack, generate hazardous by-products; arrangement—including factors such as crowding of equipment, inadequate exits, etc.; equipment—equipment which would be of high criticality, e.g., higher-order machine tools; critical skills of employees; types of exits, and means of rapid clearance of the buildings; lack of shelter areas; kinds of egress to evacuation routes.

Economic factors to be considered in determining individual plant vulnerability include: criticality of product; product as a component of vital products; exclusiveness of product; i.e., where plant is only one of its kind, even though its product may not be otherwise critical; stockpile or reserve material; or related economic vulnerabilities.

The following questions may be used as a check list in assessing vulnerability of your plant to attack. It is suggested that you discuss them with your local civil defense officials:

- Is your plant or facility located within an OCDM designated target area?
- 2. Is it within 30 miles of an assumed point of ground zero?
- 3. Is the plant or facility producing items or services necessary for defense?
- 4. Is the plant a multi-product plant?
- 5. Is the plant part of a multi-plant system?
- 6. Does the area within a 10-mile radius of this facility contain major military installations, major industrial facilities, or major port facilities?
- 7. What is the combustibility rating of facility contents?
- 8. Do the manufacturing processes, materials, or by-products create toxic hazards?

- 9. Is the facility in a single building or scattered buildings?
- 10. What is the fire resistance of building construction?
- 11. Can the building be quickly evacuated?
- 12. Is the plant located in a probable fire-storm area?
- 13. Is the plant located in a probable high-density fallout area?
- 14. Is the area in which the plant is located densely populated?

It must be realized that any plant or facility is to some extent vulnerable. In considering the above factors, only those showing an abnormally high vulnerability on one or more points should be of primary consideration. If this procedure is observed, it then becomes feasible, and within the range of practicality, to reduce the hazards progressively. Obviously, the hazards of the highest order, identified by the use of this or any similar checklist, should receive the first attention

Time devoted to study and analysis of plant vulnerability will pay handsome dividends in terms of a practical, workable, down-to-earth basis for civil defense planning in your plant.

The Civil Defense-Emergency Plans at Chase Manhattan Bank—The largest banks and financial institutions are located in our largest metropolitan areas. Such areas are prime targets in event of attack, therefore our financial institutions are extremely vulnerable.

Realizing that banking is essential to our economy, and accepting the responsibility that would be ours in a postattack and reconstruction period, the banks of this Country have been formalizing plans for activation under emergency conditions. The Chase Manhattan Bank, located in the City of New York, has long been aware of the real need for such a program.

So that you will have a concept of our emergency preparedness activity, I would like to give you a mental picture of our Bank. It is the largest bank in New York City, the second largest in the world, and does a worldwide business. There are 104 offices located in the five boroughs, with more scheduled to open in the near future. Our staff consists of 15,000 people, of which 12,000 are domestic employees and 3,000 are overseas. A new 60-story Head Office building in lower Manhattan will be ready for occupancy about the first of next year.

Bank emergency planning in New York City goes back to World War II. At that time there were the usual wardens, fire-fighters, etc.; then came Hiroshima, and the world realized that a new concept of war had been introduced. Everyone, including industry and the banking fraternity, immediately began the age-old process of counteraction and protection. By the time the Korean conflict rolled around, many were of the conviction that there was a necessity for some radical changes in thinking and for additional emergency procedures.

In 1950 the New York Clearing House Association formed a committee of representatives of the member banks to develop "an independent means of reconstructing a bank assets and liability position and its account relationship with its customers, thus permitting successor or surviving management enough information to continue operations."

The banking industry of this Country is vitally concerned in preparing for survival and has taken steps to provide information and guidance to all banks in methods of survival preparedness. Early in 1956 there was appointed an Advisory Committee on Commercial Bank Preparedness, which, in turn appointed a subcommittee known as the Banking Committee on Emergency Operations. Five manuals have been published by these committees and sent to all banks throughout the Nation. The manuals contain information on (1) organization and administration of a preparedness program; (2) personnel protection; (3) continuity of management and alternate headquarters; (4) protection of physical properties; and (5) protection of records.

The Federal Reserve System is actively encouraging and assisting banks in preparing for civil defense. Bank inspection by Federal supervisory groups includes questions on disaster and emergency preparedness. The American Bankers Association and many State Bankers Associations are sponsoring conferences and seminars, publishing articles and otherwise providing information, encouragement and assistance to banks in disaster preparedness as a normal service.

At Chase Manhattan Bank we early realized the need for expansion and modernization of our civil defense organization. Our records protection program has been in operation continuously since 1950. We later formed an Emergency Management Committee, consisting of the Executive Vice President in Charge of Operations, the Controller General and the Treasurer. This Committee supervises 4 areas of responsibility—(1) personnel and property protection; (2) continuity of management; (3) alternate headquarters, and (4) record and asset protection.

Personnel and Property Protection—In order to protect our employees we established a program of organizing and training for self-help in case of enemy attack. Unquestionably our staff of competent and dedicated employees is our bank's most important asset.

We first made a study to determine the nature of organization required. The result was the designation of a Civil Defense Coordinator and a Deputy Civil Defense Coordinator, with an organization of trained protective groups or services which consists of warden, medical, fire, police, rescue, maintenance, welfare, radiological monitoring and public information.

To fill the various services, we made a survey to determine which of our employees were already trained and qualified for a particular self-help or protective group. This was accomplished by distributing a questionnaire to all employees asking them to volunteer for training and to indicate the nature of experience and

training they had received in first-aid, nurses aid, medical or hospital corps, police, firefighting, or other similar activities.

We were amazed to find that our organization could be staffed with a minimum training program since many were already qualified in some type of life or property saving technique.

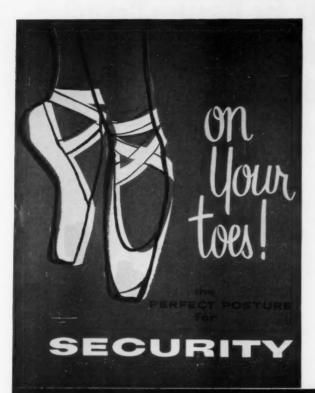
Additional classes in first-aid were initiated and are conducted during business hours by instructors who are members of our staff and who have completed the Red Cross Instructor Course. Two of our staff were sent to the OCDM Radiological Defense School to be trained as radiological monitoring instructors. One class under their tutelage has already graduated and others are being conducted. Other than the Federal Reserve Bank, we are, to our knowledge, the only bank conducting radiological monitoring classes. We are convinced we must be self-sustaining and not rely on outside help during an emergency. We have developed a few simple instructions to wardens and others in our self-help organization rather than developing a large emergency plan manual.

Continuity of Management—Bank managements must make the necessary preparations to be in a position to resume business promptly following a destructive enemy attack. As a first step in planning for continuity of management, in our bank, the corporate bylaws were amended by appropriate resolutions to provide for reconstitution of the Board following an emergency, for empowering of successor executives, and for designation of alternate headquarters. Copies of the resolutions, together with certified copies of executive succession lists, are filed in our main vault, and with the Superintendent of Banks for the State of New York. Certified copies are also maintained personnally by the Chairman of the Board, the President, and the Vice Chairman.

Alternate Company Headquarters—An adequate alternate location will be needed from which management can function during an emergency in event our corporate headquarters is destroyed by attack. Therefore, in cooperation with the 12 member banks of the New York Clearing House, we have entered into an agreement with a bank in Ithaca, New York to use parts of its building for a rallying point. Minimum essential records are maintained in the basement of the alternate location. After arrival and evaluation of the situation following attack, our bank officials will move to a nearby college which has provided adequate working area. When conditions permit, our officers and executives will continue banking operations in our Records and Asset Protection Center.

Records and Asset Protection—It is readily apparent that, following a disaster, the availability of records will greatly facilitate the work of reconstruction in the effort toward "business as usual." Therefore, an integral part of our preparedness program for emergency operations is the safeguarding of vital records. In

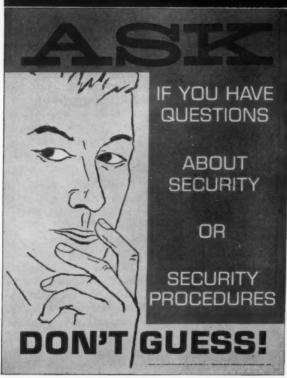
(Continued on page 140)



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Leadership Responsibility for Disaster Control— Where Should It Be Placed in the Company Organization?



Leon Weaver
Professor, School of Police
Administration and Public Safety
College of Business and
Public Service
Michigan State University

A. Lewis Russell Industrial Services Administrator Creole Petroleum Corporation



Mr. Weaver has served in various Government positions dealing with industrial disaster control and defense. He was Chief of Instruction, of the O.C.D.M. Staff College. He also served as Emergency Planning Consultant in the OCDM Industry Office, and as special lecturer and curriculum advisor for OCDM Industry Defense Courses. He has served major U.S. companies in a consulting capacity on industrial disaster control and defense plans. He has the degree Ph.D., University of Illinois.

Mr. Russell, in addition to his experience in law enforcement and industrial security work in major industrial corporations, has been a pioneer in the field of industrial disaster control. He participated in the rescue and rehabilitation work in the Texas City disaster, and while with Dow Chemical Company helped set up one of the country's first hurricane warning systems. He also was active in helping set up industrial mutual aid arrangements in the Houston area which have led to the Houston Ship Channel mutual aid system. He is a graduate of and has served as visiting lecturer at the OCDM Staff College, and has served as and advisor to the OCDM Industry Office. He pioneered the Creole "Emergency Control Plan," which is oriented to meet natural disasters and large-scale industrial accidents.

Those who approach the problem of organizing the disaster control¹ function in an on-going business organization will encounter various organizational questions, such as: Should the function be organized as a separate one, or should it be hung on some existing organizational "peg" or "box" in the organization chart? If the latter course is chosen, what is the most logical existing "box"

-safety, fire protection, industrial security (plant protection), some line department ("sales," "operations," "production," etc.)? What is to be the relationship between the disaster control officer (or emergency planner, defense coordinator, or whatever he is called) and other organizational elements? What is the scope of his responsibility and jurisdiction? Is he to exercise any directive authority or operating function? If so, in what circumstances? Is he to be full-time or part-time? How much and what kind of staff (if any) should he have? What terminology should be applied to him and his function? Examination of some typical industry defense plans and manuals concerning the disaster control function provides some clues as to possible answers to these questions; these clues suggest the hypothesis that there is no one best or even acceptable abstract answer to these questions, but that (as is the case with many organizational questions) there are some situational factors which will, in a specific set of circumstances, enable one to choose the optimum, or at least an acceptable, solution. Systematic research is needed to identify these situational factors more definitively than they are now identified in the existing state of the literature.

It should be noted that similar questions arise in the organization of the more traditional safety, fire protection, and security functions. Standard reference works identify some of the alternatives and situational factors in the numerous diverse patterns in which the organizational relationships between such functions are worked out in practice.

For example, some of the principles identified for location of the safety department or safety specialist in an organization would seem to have applicability in the location of the disaster control officer. In Simonds and Grimaldi's view the officer to whom the safety director

Twhile these statements use the terminology of "disaster control," they also may include war-caused disasters, and are applicable to various other terminologies used to describe the same or similar functions: "emergency control;" "industry defense," etc. The Creole Emergency Control Plan is aimed at natural disasters and large-scale industrial accidents rather than

reports should have the following characteristics: (1) a member of top management, someone high enough to have influence throughout the company; (2) interest in the function; (3) in charge of people and processes where safety or disaster control measures must be implemented. (Rollin H. Simonds and John V. Grimaldi, Safety Management, Richard D. Irwin, Inc., Homewood, Illinois, 1956, pp. 63, 616.)

Adding the disaster control officer brings one more element into the permutations and combinations of the older functions. Typical standard works of reference concerning these functions agree that their function should be placed as high in the organization pyramid as possible, but also reflect a tolerance of diversity and of combination with or "layering" by some other of the above-mentioned functions; this tolerance is also evidenced in the case of bringing these functions under the disaster control officer. (Rollin H. Simonds and John V. Grimaldi, Safety Management, Richard D. Irwin, Inc., Homewood, Illinois, 1956, pp. 63, 411-412, 423. Accident Prevention Manual for Industrial Operations, National Safety Council, Chicago, 1955, pp. 2-2, 35-18. Employee Organization for Fire Safety, National Fire Protection Association, Boston, 1945.)

Examination of a few typical industry defense plans and doctrinal statements concerning the organization of the disaster control function indicates that, while there has been an impressive acceptance by industry of the need for disaster control organization and for focusing responsibility for it on an officer or staff devoting full time or a substantial share of their time to it, there is also considerable diversity in the ways in which various business organizations have gone about organizing the function. In some of these plans and doctrinal statements there are also discernible ambiguities or questions which are left unresolved, at least as far as written words and organization charts are concerned.

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The following summary of a few such plans and statements will convey an impression of these diversities and questions.

The pertinent Federal Civil Defense Administration manual provides that it is the responsibility of the defense "coordinator" to "set up and direct" the system of emergency communications and control. The suggested organization chart at the plant level shows the plant defense coordinator as having directive authority over the line elements of the organization fire chief, police chief, health director, engineering chief, welfare director, chief warden. While the standard job description for the plant Defense Coordinator states that he represents management in "coordinating all civil defense activities" (italics supplied), it also goes on to say that he "plans, organizes, trains and directs the facility civil defense organization." The suggested job descriptions of the various chiefs mentioned above start out by saying: "Under the direction of the plant defense coordinator he is responsible for . . ." (Civil Defense in Industry and Institutions, FCDA Administrative Guide 16-1 pp. 9, 24, 55.)

The American Iron and Steel Institute states that at the corporate level, "a single individual should be made responsible for the coordination and execution of the corporate disaster plan." The organization chart shows the emergency planning coordinator at the corporate level as being administratively responsible to the corporate emergency advisory committee, with a dotted-line relationship to the line of authority running from the Vice President for Operations to the various plants. At the plant level the plant defense coordinator, as is the case at the corporate level, is shown as being administratively responsible (solid line) to the plant emergency advisory committee, but with a dotted-line relationship connecting him to the line of authority (solid line) running from the plant general superintendent to his line subordinates. There is a further dotted line running from the plant general superintendent to the plant defense coordinator with the cryptic word "delegated." At the corporate level the officer is called an emergency planning coordinator; at the plant level he is called plant defense coordinator. At both the corporate and plant levels this function is distinguished from the "security" (corporate level) or "plant protection" (plant level) function. The plant defense coordinator and the plant emergency advisory committee are considered to be "responsible for the organization and proper functioning of all emergency defense activities throughout the plant." However, "in general, the responsibilities of the plant defense coordinator and plant emergency advisory committe are those to be exercised prior to the emergency; that is preparing plant equipment and personnel . . . The department superintendents are responsible for the proper functioning of emergency facilities and the direction of the personnel comprising the various services within their departments." (Industrial Defense Planning Manual, American Iron and Steel Institute, pp. 4, 20, 27. Italics theirs.) Jones and Laughlin Steel Corporation uses essentially the same pattern.

The National Petroleum Council presumes that the disaster control plan should be developed by the corporate security committee and security officer. "Management should designate one person to coordinate the development, maintenance and execution of the corporate disaster plan. He might conveniently be made chairman of the Corporate Security Committee, but should be at least a member of this committee. In either case, he should be selected from upper management level and be given the authority and the time to perform his functions." At the plant level the officer involved is called the disaster control coordinator, "to be in full charge of all emergency protective activities. He should be of such executive rank that his decisions will have the force of unquestioned authority." "Directly responsible to the coordinator will be the chiefs" of the various disaster control functions. The statements are not qualified in any way to indicate any distinction between pre-emergency and post-emergency situations. Disaster Planning for the Oil and Gas Industries, National Petroleum Council, pp. 2, 28.

The Humble Oil and Refinery Company Plan adopts the chart as set out in the above-mentioned publication, although it also presents an alternative organization chart showing the plant or department disaster coordinator having direct control (solid-line relationship) over the "line" disaster control elements (fire, guards, first aid, etc.). (Disaster and Evaluation Planning for Humble Oil and Refinery Co., Houston, Texas, Mimeographed.) The preliminary draft plan of the Humble Baytown Refinery uses the latter pattern.

Articles in McGraw-Hill journals show the plant defense coordinator as being administratively responsible (solid-line relationship) for the chiefs of the various disaster control units. (Disaster Control, American Machinist Special Report, November 13, 1950, p. 2. Industrial Disaster Control, American Machinist special report No. 416, February 27, 1956, p. 135.)

U. S. Department of Commerce guidance for planning with chemical and allied industries states that "the form of organization and selection of the key personnel of the plant Disaster Group will become evident to the Plant Manager throughout the work of the Study Group for which he carries the prime responsibility. In every case the responsibility of the Disaster Group will cover the broad functions of communications, fire protection, guard protection, medical and first aid, process and materials control and mechanical functions, all under the direction of the Disaster Officer appointed by and responsible to the Plant Manager. . . . In order for any plan to work effectively, there must be someone in charge of the entire program. The Disaster Officer (Plant manager or his designee) is the coordinator of all the groups in the Disaster Plan." (Emergency and Disaster Planning for Chemical and Allied Industries, Department of Commerce, 1953, p. 10.)

The Koppers Company Defense Security Plan provides that the overall planning and supervision of the company defense security plan is made the responsibility of the Production Department Central Staff. The Industrial Relations Department, Central Staff coordinates all aspects of the plan affecting personnel. The operating divisions are charged with the planning and supervision of the defense security plan of plants of their respective divisions. At the plant level (and headquarters building level) the disaster control organization consists of a control director and assistant control director, and two deputy directors who will direct the activities of the various operational units. (Defense Security Plan, Koppers Company, Inc.—Tab 2, p. 6, and Tab 4, p. 3.)

Scanning these selected organization charts and plans for various industries and companies leads to the following generalizations:

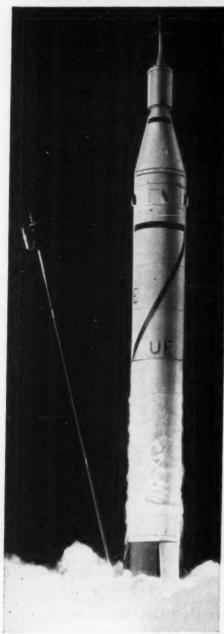
 New functions required by the industry defense program are appropriate for being organized under the operating responsibility of the disaster control officer. (Examples: rescue, radiological monitoring, wardens.) 2. With regard to "old" functions present in the normal organization chart (fire, medical, etc.) the authority of the chief disaster control officer has to be brought into relationship with the pattern embodied in the normal organization chart for day-to-day operations. A number of references in industry plans or doctrinal statements indicate either explicitly or implicitly (such as by means of a solid line on organization charts) that the chief disaster control administrator at the plant or corporate level has directive authority over all the components of the disaster control organization; this idea seems to presume that the emergency organization chart at some point in time supersedes the normal organization chart. This is either recommended explicitly or reflected implicitly in the standard references consulted. (Simonds and Grimaldi, Safety Management, pp. 417-419. Accident Prevention Manual for Industrial Operations, National Safety Council, p. 35-18. Employee Organization for Fire Safety, National Fire Protection Association.) This view does not, however, cope with the problem posed by the fact that a number of the heads of the disaster control components (such as medical officer, fire chief, etc.) in the normal organization chart in many cases are not administratively responsible to the disaster control administrator, and may outrank him.

The charts may reflect the notion that as of the time that the emergency plan is placed in effect, the directive authority of disaster control officer comes into being. They do not bring out that in the pre-emergency (planning, organization, and training) phase, some or all of these unit heads may not be subject to his direction in a formal sense. This situation is analogous to the situation of the civil defense director in many local and state civil defense organizations, where the civil defense director serves as a "chief of staff" to the chief executive (Governor or Mayor).

- 3. A distinction can be made between the disaster control organizational problem at the corporate and plant levels. At the corporate level the question of directive authority for the disaster control officer is less of a problem; at this level the planning and coordinating concept seems to be adequate and acceptable.
- 4. Some corporations apparently view disaster control or emergency planning as implicit in or an extension of an existing function—safety, fire protection, industrial security (plant protection); others view it as something transcending the old functions.
- In approaching the question of the proper organization of the disaster control function, it is useful to distinguish between the pre-emergency (plan-

(Continued on page 144)

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SPACEPROBE MISSILE is powered by rocket engines made by Rocketdyne Division of NAA. Most of America's missiles and satellites have used Rocketdyne engines in conquest of space. COMPACT BRAIN of Recomp, new general-purpose digital computer designed and built by Autonetics Division of NAA, has big-computer capacity for split-second solutions to problems. It's compact, transistorized.





FRINGE OF SPACE is the destination of the X-15 hypersonic airplane built by the Los Angeles Division of NAA. Experimental craft is designed for higher speeds and altitudes than man has flown before. High-altitude launching of X-15 is from beneath wing of B-52 (above).



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Alert Warning and Communication System for Industry



By Glenn V. Dierst Industrial Security Administrator Boeing Airplane Company Seattle, Washington

Mr. Dierst is a graduate of the University of Pittsburgh, School of Business Administration, '28, and the School of Law, '31. He has been admitted to the Bars of the States of Pennsylvania, Oregon, and Washington. He was active in the practice of law in Portland, Oregon from 1932 to 1935, then became a special agent for the FBI until 1940. He was employed by Boeing Airplane Company in 1940 as Plant Protection Manager. Mr. Dierst is a member of the Security Committee of the Aero-Space Industry Association; Security Subcommittee of the National Industrial Association; Board of Trustees, Pacific Northwest Security Association. He is a former director of the American Society for Industrial Security.

Pre-recorded instructions, emergency power for a central communication control center and a wide program of information to employees are the keys to plans of the Boeing Airplane Company for action in case of an air raid or other major disaster.

The company, with its principal plants located in Seattle and Renton, Washington, is an area obviously likely to be high on the target list for any aggressor. Its 60,000 employees, scattered throughout 12,000,000 square feet of factory, office and warehouse, form the largest single industrial group in the entire Pacific Northwest. Their proper action in emergency could be the difference between orderly procedure and complete chaos for an entire city and its surrounding areas; and by the same token, safety and control of that large group of employees places a tremendous responsibility on the company's entire internal security organization company guards, firemen, medical teams, industrial relations personnel and supervisors. Whether the work force is to be evacuated through outskirts of a city constricted by waterways and hilly terrain, or given some sort of shelter within the company's huge complex of buildings, tested plans are essential-and good communications essential to the plans.

These plans must—and do—take cognizance of the total problem faced by the city and surrounding King County.

In the Seattle-King County area, the community Civil Defense organization—operating under the State of Washington Director of Civil Defense—has placed sirens in strategic locations to warn the general public of impending attack. These sirens are sounded each Wednesday at noon, as a test and to keep the public cognizant of the existence and purposes of the system. Newspapers and radio and television stations periodically have disseminated reminders of the meaning of siren signals—"Take Cover" or "Evacuate"—as well as outlining specific posted evacuation routes into rural assembly areas for refugees.

Obviously, such a system, while valuable to a city, is not adequate for a large industrial establishment such as Boeing. Industrial noises, building construction and distances make the sirens largely ineffective for Boeing workers; and the size and complexity of the company create special problems not shared by the community.

To fulfill its responsibility toward the community and its employees, Boeing has developed its internal plans in coordination both with regular municipal security forces (police, sheriff's officers, firemen and others) and the Civil Defense officials, but has done its own planning through an Area Emergency Planning Committee. This committee represents top management and departments directly involved: Industrial Relations, Security (guards and firemen), Medical, Plant Facilities, Transportation, Flight Test, Maintenance, Manufacturing, Finance and Engineering. Representatives of each department have prepared plans necessary in their respective fields of responsibility, and all plans have been coordinated by the committee or its sub-committees. Meetings are held quarterly to review conditions and decide whether adjustments or further implementations are needed.

These plans, of necessity, include the company's Plant II, with 4,425,000 feet of covered floor space and some 24,000 employees, as well as major plants eight miles away and more distant warehouses. The table on the following page shows the problem.

With such a large captive group within an industrial plant, it is essential that professional personnel such as guards, firemen, medical, maintenance and transportation be alerted ahead of the general plant population so they can be placed at predetermined posts to prepare for mass movement of employees. Gates must be opened, fire trucks dispersed, traffic obstacles removed and guards stationed at bottleneck locations to aid in an orderly movement. All this must be done quickly.

The Boeing Airplane Company has a central communication control center at its main Plant II which controls all emergency communications for all major

Covered by Public Address Systems	Square Foot Covered Area	Employees	Distance from Plant II	Direction
Plant II				
(Communication Control Center)	4,425,000	24,000	-	
Plant I	388,000	1,800	2 Miles	North
Development Center	1,048,000	5,600	2 Miles	South
Missile Production Center	1,319,000	7,150	4 Miles	North
Todd A & B	515,000	1,200	5 Miles	North
Renton	3,055,000	19,000	8 Miles	South
Total	10,750,000	58,750		
Warning by Public Sirens				
13 Outside Warehouses	1,654,951	3,000	9 Mile	
Total	12,404,951	61,750	Radius	

facilities, except Renton. The Renton Facility has a similar communication center which is crossconnected by direct telephone line and two-way radio with Plant II. These centers are manned 24-hours per day, 7 days per week.

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At the communication centers all alarms such as fire, water flow, watchman service, etc., are received. In addition to normal telephone communication, direct lines connect all major facilities and other emergency groups, such as the Fire Department, Medical Department, Airport Radio, Flight Test, Maintenance and Transportation. Two-way radio communication also is available at these emergency group locations, as well as on mobile equipment.

Each major plant has a public address system which is routinely used for internal paging and announcements. The guard dispatcher, by a flip of a switch, can take complete control of the public address system for emergency announcements. The system is arranged so the dispatcher can localize his announcement to a selected area or facility or have an over-all coverage. All communication devices and lighting at control centers are serviced by an automatic emergency power system which starts emergency generators when public power fails.

To receive alerts from Civil Defense, the telephone companies have installed a network referred to as the "Bell and Light" which is available to industrial subscribers and other key installations. The Civil Defense headquarters in the community interprets the intelligence information disseminated by the U. S. Air Force Defense Command and determines whether to send out a "Take Cover" (red alert signal) or an "Evacuation" (yellow or blue signal), based upon estimated elapsed time before attack. Simultaneously with the bell and light warning, the public sirens are sounded and commercial radio stations go on Conelrad—640 KC or 1240 KC on the radio dial.

The Guard Dispatcher, upon receipt of an alert signal, disseminates the information by direct emergency lines to professional personnel who then start their plans in action. Guards open gates; electricans and maintenance personnel take their positions and cut predesignated utilities, steam lines, oxygen lines and boilers; the fire and transportation departments disperse equipment; radio equipped vehicles are instructed to go on Conelrad.

After the professional personnel have been notified, the general notification to employees is made over the public address system. Employees have been previously informed of the action they should take through the distribution of instructions and the "Boeing News", our house organ. Throughout the facilities, instructions as shown in the photograph also are posted in restrooms, at gates and other frequented places. These posters continually remind the employees of the action they should take during the "Take Cover" (red) and "Evacuate" (yellow) alert.

The general notification to employees is given by a pre-recorded announcement played over the public address system by the dispatcher. The company feels a record is desirable in order that the message be given as clearly and concisely as possible. There is a record for "yellow" or Evacuation Warning and another for "red" or Seek Cover Warning. The text of these recordings are as follows:

"YELLOW" OR EVACUATION WARNING

"Long Steady Siren

"Attention all employees. Attention all employees. Listen carefully. Listen carefully.

"We have just received an air raid evacuation warning. We have just received an air raid evacuation warning.

"Keep calm. Shut off your machines. Turn off the power. Make your area and equipment safe. Prepare for immediate evacuation. Prepare for immediate evacuation.

"Pause

"Guards, firemen, and emergency employees report to your stations. This is an air raid warning. This is an air raid evacuation warning. Shut off your machines and leave the plant at once. Shut off your machines and leave the plant at once.

"Walk, do not run. Go to your car and drive south on Marginal Way, Airport Way, or Des Moines Way. Keep calm. Go to your car and drive south on Marginal Way, Airport Way, or Des Moines Way. Do not go home. Do not use telephones. Drive south only. Do not go home. Do not phone. Stay with the traffic flow. Have a full car. Take pedestrians. Have a full car and drive south only. Do not leave traffic flow until directed. Do not leave traffic flow until directed.

"Turn your radio to 640-640 and follow instructions.

"Pause

"This is an air raid evacuation warning. Evacuate the plant immediately. Drive south on Marginal Way, Airport Way, or Des Moines Way. Drive carefully. Assist others and keep calm. Keep your radio turned to 640 for further instructions."



Air raid instructions posted in restrooms, at gates and other frequented places.

"RED" OR SEEK COVER WARNING

"Warbling Siren

"Attention all employees. Attention all employees. We have just received an air raid alert. This is an air raid alert. Keep calm and follow instructions. Keep calm and follow instructions. Turn off your machine and make your area safe. Turn off your machine and make your area safe.

"Seek cover immediately. Seek cover immediately. Do not evacuate. Do not evacuate.

"Get under a desk, work bench, or some type of protection. Keep close to partitions or walls. Stay away from glass areas. Do not leave the plant or take your car or phone. Keep calm and listen for further instructions. Do not leave the plant or take your car. Seek cover in your work area. Seek cover in your work area.

"Pause

"We have just received a red air raid alert. A red air raid alert alarm has just sounded. Seek cover at once. Seek cover at once. Keep calm. Walk, do not run. Keep calm. Walk, do not run. Get under some cover or near a wall. Bury your face in your arm and cover your eyes. Bury your face in your arm and cover your eyes. Keep calm and listen for further instructions. You will be notified when the danger has passed."

To test the effectiveness of the communication system and Boeing's Civil Defense plan, the company has participated in the annual Civil Defense "Operation



Boeing Communications Center—Connected to the community bell and light emergency alarm system, the Boeing Airplane Company's emergency communications center is staffed 24 hours a day and can reach all sections of the industrial complex by loudspeaker and siren systems. Pre-recorded instructions can be disseminated, telling employees precisely what to do in differing situations. In the picture, Dick Companion simulates the playing of a record over the company system while Lt. Carl Gowen maintains direct line communication with another emergency post. Stand-by power is available for the system if normal power sources fail.

Alert". An excerpt from instructions issued on June 27, 1957, by W. E. Beall, Senior Vice President of Boeing Airplane Company, is given below:

"Subject: Boeing Civil Defense Exercise, July 12, 1957

"At a recent meeting of the Corporate Emergency Advisory Committee it was recommended that Boeing participate in the national civil defense exercise on July 12, 1957. It was proposed that the various professional organizations within the Company carry out their emergency plans, that the yellow alert records be played over the public address system, and employees would shut off their machines and prepare their shops for evacuation, but would not evacuate. It was also proposed that Flight Test carry out their program of aircraft evacuation up to the point of actual takeoff, or preparation for takeoff. The Corporate Emergency Advisory Committee gave their approval to this plan.

"This memorandum describes the nature, scope, and time schedule of the participation expected from all organizations and employees.

"Facts concerning the exercise are as follows:

Time: Yellow alert (evacuation warning siren) approximately 8:00 a.m. PST, July 12, 1957.

Scope: Local, State, and Nation-wide participation. 2:00 p.m.

Publicity: Extensive radio, television, newspaper publicity is expected during the entire week from July 8 to 12. This will be supplemented by publications in 'Management Information' and 'Boeing News.'

(Continued on page 141)

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The Plant Emergency Control Center



By William Y. Humphreys Director of Plant Protection United Aircraft Corporation East Hartford, Connecticut

Mr. Humphreys' 20 years of security experience with United Aircraft, backed by law practice and work as a special agent for the FBI, well qualifies him in subjects essential to industrial civil defense. He is responsible for the safety and well-being of some 57,000 employees and the extensive property of his firm, throughout four large divisions. He joined United Aircraft in 1949. He formerly was First Vice-President and is now a member of the Board of Directors of A.S.I.S.

In a period when a potential enemy's nuclear weapons pose an everpresent threat to the nation and particularly to an industrial complex such as New England, a well-equipped, highly-protected, and versatile emergency control center is a necessity to a large corporation.

This unit should be bomb-proof, gas-proof, falloutproof, and self-sustaining. It should be able to exist for extended periods of time on its own oxygen supply and carry out its function even though some of the equipment may have suffered damage during an attack.

United Aircraft Corporation's emergency control center was constructed on the above premise. This center, however, is not a dust-gathering labyrinth of vault-like rooms which would come to life only during an emergency. It is operated on a 24-hour, 365-day basis, continually coordinating the movements of the company's internal agencies such as the guard and fire department, and the plant hospital. It also serves on occasion as a public service broadcast point to employees.

The center is located underground at United's Pratt & Whitney Aircraft division in East Hartford, Connecticut. Its four rooms comprise approximately 2,660 square feet of floor space. The main room, measuring 19 feet by 26 feet, contains a five-bank console with duplicate transmitting and receiving equipment, three large file drums with the names and automobile registration of every Pratt & Whitney Aircraft employee, a separate file of all employees by name, and a public

address system. In addition, the main room contains a modern fire-alarm relay system and extra telephones for use in an emergency.

A small soundproof room directly off the main room is used by corporation officials for public address purposes. In the event of an actual attack, it would be the originating point for communications.

A classroom measuring 24 feet by 16 feet can be used for instruction or the showing of movies and slides. On occasion, it is used by company officials for discussion of classified projects.

Completing the four room arrangement is a utility room containing a 75 kilowatt generator, sump pumps, an air circulating system, oxygen, and air purifying equipment.

The center has an inside and outside exit with doors of the type recommended by Civil Defense officials. These doors are constructed of heavy gauge steel and close into rubber-lined jams which make them as airtight as a submarine hatch.

In order to keep pace with advancing technological strides in radio transmitting and receiving, a workable emergency control center must be flexible and be able to adapt itself quickly to changes.

Recently, the Federal Communications Commission granted a change in the center's radio frequency from 30 megacycles to 150 megacycles. This meant that some new equipment would be needed and some existing equipment would have to be modified. The task was performed quickly and with no interruption to regular transmission and receiving. The construction of the five-bank console provided easy access to the



At United Aircraft, a transistorized two-way radio is standard equipment on all plant protection force vehicles. The drivers receive instructions direct from the emergency control center. In addition, the center maintains constant communication with local and state police.



The names and automobile registration of every Pratt & Whitney Aircraft division employee appears in the center's extensive files. In the rear, a member of the guard force prepares a tape for the public address system.

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sets. All two-way radios in cruisers, ambulances, and vital areas were transistorized, and a new high-gain antenna was placed in operation.

Through a refined relay system, the center has almost instantaneous contact with the corporation's divisional headquarters and manufacturing operations throughout the State of Connecticut. The director of plant protection can be reached on his automobile two-way radio by this relay method, and be advised of progressive developments in any situation. In essence, this gives the emergency control center border to border contact within the State.

The center maintains constant communications with the local East Hartford police and with the State police. This mutual assistance can be beneficial during normal every day operations and particularly in the event of a disaster or emergency.

In the normal daily routine, the center provides many services to employees. In the event an employee leaves his automobile lights or radio on, the car registration is cross-checked in the drum files and the employee is notified. On the other hand, if an automobile is illegally parked, the same process is applied and the employee receives a parking ticket. The center also provides quick assistance in time of sickness or accident.

During the World Series, it was found that employees were leaving work to listen to radio commentary. To offset this, the public address system was put to work and an inning by inning broadcast was made. This has proved very satisfactory and is a regular fall feature. This use of the public address system is the only deviation from its regular official function.

To put the wheels in motion upon receiving an alert from Conel-rad is a relatively simple procedure. The situation that would arise from an alert has been carefully planned and executed through many drills.

A pre-recorded tape of instructions (the pre-recording is done to assure an even, unexcited voice) is at the ready position on the public address system at all times. At the flick of a switch, employees are notified and an orderly process of evacuation begins. An alarm is sounded simultaneously. Taped music with three minutes breaks for current announcements is beamed into each shelter.

To carry out the orderly process of an alert, the regular plant protection force is augmented by the corporation's volunteer civil defense group. This group is called the Auxiliary Defense Corps.

The assignment of this unit is to maintain a calm evacuation and to man the shelter's "walkie-talkie" radios. These volunteers advise the control center when the evacuation is complete and wait for further instructions.

FCC regulations call for radio silence in each shelter unless an acute emergency requires contact with the control center. Strategically placed radio packs guarantee constant communication to the center from every area of the plant. Periodically, radio equipment in the shelter and vital areas are checked to insure their performance during an emergency.

At alert time, the classroom area in the control center is used by key plant personnel ranging from medical directors to plant engineers. From this vantage point they can gather information on the progress of an attack and inform and advise employees.

The usefulness and versatility of this emergency control center can best be illustrated by the fact that in the year 1959, 78,263 transmissions were made.

Although we hope the day never comes when we have to utilize the full capabilities of our emergency control center, we feel that being prepared is half the battle.



The emergency control room at United Aircraft is operated on a 24-hours, 365-day basis. It coordinates the movements of the company's internal agencies such as the guard and fire department, and the plant hospital. During 1959, the center made over 78,000 transmissions.

Planning Emergency Shutdown Procedures



By E. W. Smith

Plant Protection Superintendent
and Security Officer
Midland Division,
The Dow Chemical Co.
Midland, Michigan

Mr. Smith has been with The Dow Chemical Company for 25 years. Prior to assuming his present post he served as assistant superintendent. He currently is serving as vicechairman of the Detroit Chapter of the American Society for Industrial Security.

Proven procedures for shutdown of operations and equipment are a vital part of emergency planning in industrial plants. The complexity of equipment, variety of products, and scope of activity in a large chemical plant such as ours only serves to emphasize the importance of this phase of advance planning. In some areas, pulling a switch or closing a valve may be all that is required to shut down equipment safely. Other areas (those using extremely high temperatures, as an example) may require the concerted effort of several people and take several hours to accomplish.

The nature of the emergency, whether it be an in-plant disaster, natural disaster or enemy attack, and the advance warning time would largely govern the plan of action. Because of these factors, some areas may require plans for two types of shutdown, the choice hinging on the circumstances at the time of the disaster:

1. Standard (or Routine) Shutdown

When advance warning time is sufficient, an orderly shutdown may be accomplished without loss of equipment or product.

2. "Crash" Shutdown

An alternate "crash" shutdown procedure should also be planned where immediate shutdown is required and where safety of personnel assigned this duty is involved. This type of shutdown would likely result in loss of product and possibly some equipment, but would remove the hazards of additional damage to personnel, property or equipment.

If these factors are not taken into consideration, then the resulting damage or reactions may cause more damage than the initial disaster.

As an example, we have to contend with both simple and complex shutdown procedures in The Dow Chemical Company's Midland, Michigan plant. Our approach to this phase of planning was carried out in the following manner:

Our Midland Division Emergency Plan has been broken down into six major categories:

- 1. Unit Emergency Plans
- 2. Emergency Services Plans
- 3. Communications
- 4. Evacuation
- 5. Mobile Field Headquarters
- 6. Periodic Hypothetical Emergencies

Unit Emergency Plan—The Unit Emergency Plan developed by each separate shop, laboratory, production unit or service department is the KEY to the effectiveness of the entire emergency plan organization. Development of these unit plans assures the program growing from the ground up, rather than being imposed from the top down.

Each plant group is aided in the development of its unit plan through provisions of a Guide for Development of Unit Emergency Plan. The major subject headings of this guide are:

- I. Scope of Unit Plan
- II. Initiation of Emergency Alarm
- III. Emergency Plan Procedure (shutdownevacuation)
- IV. Trial Runs

These Unit Plans (in writing) are submitted to the Emergency Plan Work Committee where they are checked for completeness.

Under "shutdown" procedure, the written plan may indicate the various steps of shutdown procedure or it may state that the detailed operating instructions (at the building) cover routine and emergency shutdown procedures. Either is acceptable in the written plan.

Five basic steps should be considered in establishing the procedure for shutting down operations for each unit:

- Who is responsible for establishing shutdown procedure.
- 2. Who will activate the shutdown.
- 3. Methods to be used:
 - A. Routine shutdown
 - B. "Crash" shutdown

- Assignment of individual wardens or groups to carry out definite assignments.
- Color coding and special marking of utilities should be considered.

Hypothetical Emergencies—The training of personnel in shutdown procedures is a necessity. It is equally as important to conduct periodic "dry runs" to familiarize employees with the procedure and to keep the program alive. With constant training, it will become an involuntary action in time of disaster for employees to perform in the manner to which they have become accustomed.

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At the Dow Midland plant, "test runs" of the individual Unit Plan are conducted by building supervision once every two or three months. In addition, a hypothetical emergency problem occurs approximately once every six months for the entire plant.

Testing the Unit Plan—Although it is the recommendation of the Emergency Plan Committee that individual Unit Plans be tested once every two or three months, tests are actually scheduled and carried out by the supervisor of each unit. This affords an excellent opportunity to test shutdown procedures and look for flaws in planning.



Plant shut-down procedures are practiced regularly at Dow Chemical Company by placing tags on electrical switches and shut-off valves in simulated disaster exercises.

Semi-Annual Test For Entire Plant—The semi-annual "hypothetical emergency" is conducted on a semi-annual basis to test the overall Midland Division Emergency Plan for internal organization and effectiveness. The test being hypothetical, it is a desired feature that actual production should not be curtailed or operations actually shut down.

For this reason, a complete write-up of the problem (Hypothetical Emergency) is sent in advance to all supervision.

Simulated hydrocarbon fires, chlorine leaks, tornadoes, etc., may be covered. When the problem is "run off," actual employee participation varies to some extent, and is dependent on the practicability of carrying out building evacuation and simulated shutdown procedures.



Complete instructions on how to shut-down each unit, together with emergency procedures and hazards and precautions, are posted for quick and easy reference at Dow Chemical Company.

It is specified that although the bulk of employees evacuate to a safe area away from the building, predesignated key operating personnel remain in their building to continue necessary operations. In the "affected" areas, these operators use gas masks (for hypothetical non-flammable gas release) and simulate actual shutdown through use of tags attached to valves, switches, etc., or by using chalk to mark the equipment, indicating the simulated shutdown.

These semi-annual problems also provide every department with an opportunity to study its entire Unit Emergency Plan in the light of the practice problem.

At the conclusion of the problem, each department submits a report, in the form of a completed question-naire, showing how its Unit Emergency Plan functioned. These questionnaires are studied by the Emergency Plan Committee, answers are consolidated and an overall report is "fed back" to supervisory personnel. The overall result is the education of all plant personnel in spotting and correcting weak spots in shutdown procedures, evacuation, and the associated problems they would encounter in an actual disaster.

Obviously, no one relishes the thought of going through a real disaster to learn the weak points of his program. Test alerts help disclose many of these weak points.

The Division Plan—In our overall Emergency Plan for the Midland Division of The Dow Chemical Company, we have defined the goals of emergency planning as follows:

- To minimize effects of any incident of disaster proportions upon plant and community personnel.
- To keep property and equipment loss at a minimum.
- To ensure cooperation of all plant departments charged with specific activities in time of an emergency.

(Continued on page 142)

Inventory of Employee Skills for Disaster Control



By Joseph F. Doherty General Security Coordinator Bell Telephone Laboratories, Inc. New York, New York

Mr. Doherty attended Fordham University and received the Bachelor of Laws degree at the New York University School of Law and a Master of Business Administration degree at Columbia University Graduate School of Business. He served as a Special Agent with the F.B.I. 1994. During World War II he served as a Lieutenant with the 20th Air Force, China-Burma-India and Pacific Theaters, and was awarded the Distinguished Flying Cross and the Air Medal with two clusters. He is a member of the New York Bar, the American Bar Association, Phi Delta Phi, and Society of Former Special Agents of the F.B.I. He is a Charter Member of the A.S.I.S., a former Chairman of the New York Chapter and currently a Director of A.S.I.S.

In the Fall of 1959 the New York City Police Department came to the assistance of a four month old baby critically ill with acute bronchitis complicated by a congenital heart defect. How was this assistance rendered you may ask? The first thing that comes to mind is a police rescue unit supplying oxygen or rushing the baby to the nearest hospital for treatment. The fact is that the assistance was rendered through the use of a modern electronic IBM selector system that catalogs police personnel skills and backgrounds.

The baby in question was Chinese, and the father of the child only spoke Chinese and to add to the difficulty he spoke only the Cantonese dialect. It was essential to the child's recovery that the attending physicians be apprised of the child's medical history and symptoms. They had reached an impasse due to the father's inability to speak anything but Cantonese Chinese. Fortunately, a Chinese doctor on the hospital staff recognized the dialect as Cantonese although he could not understand it.

A patrolman at the scene placed a call to the Personnel Records Unit at Police Headquarters. Within minutes, through the use of a high-speed personnel selector system of coded cards, the name of a patrolman who speaks Cantonese popped out of an IBM machine.

The patrolman was contacted at home, a three-way telephone conversation was set up between an attending physician, the child's father and the patrolman interpreter, who interpreted the doctor's questions and the parent's answers regarding the symptoms and medical history of the child.

This excellent system has been used time after time in selecting police officers with special abilities, skills, pertinent background and physical characteristics that can be put to use in emergency situations such as the foregoing, or in the less urgent situations which occur frequently in the diverse activities carried on by the New York City Police Department. For example, if there is a need for eight sturdy six footers who can speak a particular foreign language in order to provide a bodyguard for a visiting foreign dignitary, their names will be quickly forthcoming through the operation of this system. Numerous other Federal, State and local law enforcement agencies utilize a similar system that catalogs personnel by special talents and skills as well as routine biographical and physical details.

By now you are probably wondering what is the relationship between what I have recounted above concerning the sick Chinese baby and the title of this article. The chances that you will need an individual who can speak Cantonese in an emergency situation at your plant is rather remote. But how about a trained fire warden who is a member of his community's volunteer fire brigade, or was trained in fire fighting in one of the excellent military fire schools while in the armed forces; or perhaps an ex-Navy Medical Corpsman who rendered first aid to wounded marines while in military service. Certainly they would fit into your program for disaster control and emergency planning. However, you will never know which of your employees possess these skills unless you adopt a procedure which would open up the untapped reservoir of employee background abilities and training that every company surely has. This can be accomplished by instituting a company-wide inventory of employees' skills. Such information is easy to obtain and the system you adopt depends, of course, on your organization structure, size, etc. You will, no doubt, find numerous employees with a variety of special skills and abilities that have no relation to the particular requirements of their job classification.

From a cost standpoint you will be effecting a saving if you can locate employees already possessing the training you need, thereby either eliminating any need for establishing a large-scale training program or minimizing the number that have to be trained.

A simple method for obtaining the information you are interested in is through the use of a questionnaire

form which each employee is asked to fill out.* Ouestions should be designed to obtain information regarding the nature and extent of the background, training, skills, hobbies and interests of each employee that can be effectively utilized in the company Industrial Defense and disaster control program. Employee cooperation and interest can be expected. Most employees possess the natural human inclination to discuss impersonal background information regarding their outside hobbies, skills, etc. that they have accumulated through their own endeavors. It should be made clear to each employee when requesting the information that it is to be furnished on a purely voluntary basis and the purpose for which it is being collected should be clearly delineated. In those few isolated cases where an employee declines to submit a questionnaire, the matter should be quickly dropped without any attempt to persuade him to change his mind, inasmuch as voluntaryism is essential to the optimum use of employees' skills in your Industrial Defense Program.

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From an employee's standpoint it is very possible that the information he divulges may assist him in obtaining a higher job classification by acquainting management with heretofore unknown skills and interests that may be put to good use in the work of the company. Consideration for a job opening may be given to an employee who has indicated both an interest and a particular skill on the questionnaire which he submits during the course of this inventory.

Of course, a great deal of information requested on the questionnaire will be duplicative of the information previously requested on personnel forms and already contained in personnel records. However, in many instances much of the information in the personnel files is no longer current or complete, and an up-to-date inventory of skills currently possessed is desirable. If your company updates its personnel records periodically, at least every six months, and obtains the required background information, so much the better; no additional questionnaire may be necessary and your source material would be readily available.

If a company has a bargaining unit, the shop steward or other union representative should not be overlooked. Some unions have taken full responsibility for obtaining appropriate background information and will make it available for Industrial Defense purposes. Employee clubs and intra-company social organizations may be able to provide a source of information regarding employees' skills and interests.

For illustrative purposes an outline of the type of questionnaire form which could be used is set out below.

Once the inventory of employees' skills has been accomplished a systematized cataloging of the various skills applicable to Industrial Defense and disaster control should be established for ready reference. Again, the size and organization structure of the particular company involved will determine the system to be adopted. In small companies a simple 3 x 5 card index

file of employees, filed alphabetically under the particular Industrial Defense skill category will suffice. For example, under fire fighting, rescue squad, first aid, auxiliary police, etc. would be placed the cards of those employees who have the requisite skill listing their names, duties, Industrial Defense assignment, etc. If an employee is trained in more than one skill he would have a separate card under each category. In large companies a more refined system utilizing a mechanical or electronic data processing system of coded punched cards similar to that in use in large law enforcement agencies would be more appropriate. Whatever system is used it must be kept relatively current for maximum usefulness. Therefore, it is suggested that the system adopted should be susceptible to additions and deletions as employees are transferred, terminated or acquire additional skills or training.

Industry, through a complete inventory of its human resources, and the concomitant recording of same, has readily available the manpower so essential to an effective Industrial Defense and Disaster Control Program. The inventory of employees' skills, background, and applicable training, is basic to the implementation of any program of self-help and survival. When properly designed, appropriately introduced, and effectively executed, the inventory of employees' skills will save time and expense, and encourage employee cooperation and enthusiastic participation in protecting life and property at the work place in the event of an Industrial Defense emergency or other major disaster.

*BACKGROUND QUESTIONNAIRE FOR INDUSTRIAL DEFENSE AND DISASTER CONTROL

. Person	al data	
Name_		Sex
Date o	f Birth	Height
Job Classification		Weight
		Department Number_

 Military status. Indicate Reserve status (Active or Inactive, National Guard, Branch of Service, highest rank attained and total number of years of military service, including active duty and reserve time).

 Work history. Indicate the "type" of work (not classifications) in the order in which they occurred and indicate the duration of each, up to and including your present type of work for the past ten years.

Type of Work Duration

- 4. Formal Education. Indicate the highest level of formal education you attained, the kind of school it was attained in, whether you were a day or night student, whether or not you graduated, the kind of certificate or degree you were awarded, and your field of study. (For example: 4 years technical high school, days, graduated with technical diploma, mechanical drafting.)
- Special Courses. Indicate any special courses you may have taken either at day school, night school, adult education classes, correspondence schools, military schools, company

(Continued on page 143)

Planning and Organizing for Self-Help in Time of Disaster

Mr. Healy is Chairman of the Board of Directors of the American Society for Industrial Security, and a charter member of the organization. He was President of the Society in 1958-59. He joined Ramo-Wooldridge, a division of Thompson Ramo Wooldridge, Inc., in 1955, and has been in charge of its security program ever since. He served as intelligence and tank officer in World War II, then spent five years as a special agent with the FBI, and later spent four years as assistant to the Inspector General, Air Research and Development Command, U.S. Air Force. He resigned this appointment to join Ramo-Wooldridge. He is a graduate of the University of Iowa and attended law school at the University of Maryland. He is author of numerous articles on industrial security and is guest lecturer at the Department of Defense Security School and a member of the Advisory Committee on Police Science at Long Beach State College.

By Richard J. Healy
Assistant Director
Industrial Relations
Ramo-Wooldridge
Los Angeles, California



Every industrial organization, large or small, should plan for its own self protection by organizing to assure the necessary leadership and trained employees for use in case of emergency.

Advanced Planning—Effective advanced planning and training is as essential to disaster control as it is in any other phase of industrial life. Those responsible for the administration of an industrial organization in an emergency must be able to concentrate on the solution of major problems and not be required to spend an undue amount of time attempting to bring some organization out of chaos resulting from a lack of prior planning. It is conceivable that an entire organization, lacking a pre-disaster plan and trained employees, could be put out of business or seriously affected without having its facilities suffer any minor damage.

Employees as well as management should be vitally interested in participating in a disaster program, because the destruction of both the organization and its personnel is threatened in an emergency. Rarely is any significant advance warning given that a disaster is to occur. Therefore, it should be assumed it will be too late to organize for survival after an emergency or disaster happens. Without proper advance planning and training, panic could easily occur with a further increase in the loss of lives and property. In addition to contributing to the protection of property and personnel during an emergency, good preplanning will enable an organization to recover quickly after an emergency and continue to contribute to the productive effort of the country.

In case of a community-wide emergency, it is even more important to have a well-designed plan that will make an organization self sufficient. In such an event, sufficient help cannot be counted on from other industrial organizations and Government agencies due to the fact that they will probably be occupied with other problems.

Organization—The designation of a program director or coordinator at the corporation level and at each facility is normally the first step in establishing a disaster plan. In large organizations, where the problems are complicated, the position may require the services of a full time employee, while in smaller activities this duty may be assigned as an additional responsibility.

The program director should provide coordination and general direction within his organization. He should immediately prepare appropriate policy and administrative directives for the establishment of the program. In addition, he should establish close liaison with civil defense authorities, local government agencies and the program directors of other plants in the community. These representatives have a storehouse of information in the form of up-to-date emergency planning and guidance information. Such material is invaluable as a help in the saving of time and work. The program coordinator also needs to tie his program in with these representatives so that his plans will be coordinated with the community-wide plan.

A disaster committee, representing various departments in the organization, can be of invaluable help to the program coordinator by advising him and assisting him with his planning. So that the planning will be effective, both the coordinator and members of the committee should be familiar with the legally established authority, organization and procedures which become effective upon declaration of an emergency by the President or Congress.

The proper selection of key administrators for the implementation of the program is an important step

the program coordinator must take to establish an organization to function during an emergency. These administrators should be carefully chosen from among the service heads, employee representatives and key personnel.

Policy and Procedure—The program coordinator must, early in the program planning stage, begin to develop a disaster control policy and procedure manual which will not only be of use in training, but can be used when an emergency strikes. The disaster committee as well as the key administrators who will administer the emergency plan can be helpful to the program coordinator in developing the manual. The manual should, if possible, cover every eventuality. It should be designed so that policies and procedures can be revised because of changes or when improvements in the program need to be made. The following index has been suggested as a possible guide to the development of such a manual:

Administrative Directives

- 1. Protection of personnel and production
- 2. Master Plan directory
- 3. Pre-emergency committee directory
- 4. Post-emergency committee directory
- 5. Plant protection unit directory
- 6. Communications unit directory
- 7. Engineering unit directory
- 8. Medical unit directory
- 9. Welfare unit directory
- 10. Mutual aid directory

Operational Procedures

- 1. Fire and explosion
- 2. High wind and tornado
- 3. Flood
- 4. Strike or riot
- 5. Sabotage and/or espionage
- 6. Enemy attack
- 7. Chemical or radioactive fallout

It has been further suggested that each section should describe: control organization, task organization, general situation, mission, implementation, administration and function, and command and communications, as they are affected by that particular source of danger both before and after the disaster. In addition, each chapter should cover activity responsibilities, as annexes to the plan, for each service unit as they relate to the specific danger, plus a section describing location of emergency equipment, evacuation plan, shelter provisions, and any other pertinent information.

Training—Training is the key to the success of any plan. For that reason, a training program which will reach everyone in the organization should be undertaken. The program should be designed so that each employee will be aware of the responsibility he will be required to accept in case of a disaster. Training also will help each employee to react automatically in an emergency. The training program should reach three levels: Training for the program coordinator, his administrative heads and the disaster committee; general



A Red Cross instructor giving first-aid training to a group of Security Officers at Ramo-Wooldridge as a part of the company Disaster Training Program.

training for all employees; and specialized training for those responsible for services such as police, fire, etc.

Training for Key Administrators—The coordinator, members of the committee and the program administrative leaders may obtain outstanding training from a variety of sources which will be of great value in the administration of the program. The most valuable training course for this group is the course offered at the OCDM Staff College at Battle Creek, Michigan. This course, which is designated "Industry Defense and Mobilization," is a free, intensive, one-week course



Security Officers giving fire training to a group of volunteer employees in the Ramo-Wooldridge Plant as a part of the company Disaster Training Program.

taught by experts. It is available to all industry employees responsible for disaster control. Other valuable training information is available in material published by OCDM. Of particular value are Disaster and Civil Defense seminars and meetings held in several of the larger cities throughout the country each year. Programs at these meetings are generally designed around the latest information and ideas available. The information is usually presented by top experts from both

Government and industry with international reputations in the field. The local Civil Defense Administrator and the national headquarters of the OCDM can make suggestions for additional training information and aids which are readily available. The Disaster and Emergency Planning Committee of the American Society for Industrial Security can also supply information and studies completed as a part of Society seminars and activities.

General Employee Training—It is vitally important that the training program reach every level in the organization and that all employees receive training which will help them to protect themselves. All employees should be told what to do in case of an emergency. This can be handled in a variety of ways, among which are: Employee bulletins, articles in the company newspaper and employee meetings. Regardless of how the information is transmitted to employees, they should be constantly made aware of the part they will be required to play either to help themselves or to assist in implementing the entire program.

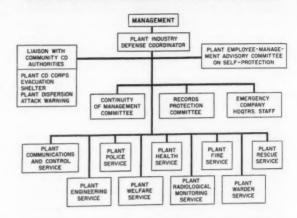
The most basic training would include implementation of a plan to shut the plant down and evacuate the buildings. The first drills of this type should be announced in advance and everyone should be properly instructed in what to do. Such planned drills will show weaknesses in planning, coordination and communication. After the necessary corrections have been made, drills can then be held without warning. The participation of all employees in such drills will prevent panic or stampede in time of actual disaster.

Additional general employee training can be extended to include firefighting, rescue, police, first aid and a variety of other subjects to help protect the facility and occupants in time of disaster. An additional advantage to such training is that each employee has the training and information to be helpful in the survival of his family at home. The community-wide protection is also increased because trained employees can assist the local police, fire and other groups on a volunteer basis during a disaster.

Service Group Training—Specialized training for the service groups within the organization such as police, fire, medical, etc., is of paramount importance to the success of any disaster program. It is desirable that these units be supplemented with volunteers from other organizations within the plant who can help to enlarge the effectiveness of the service groups. The head of each service unit should take the responsibility for the training of the regular members of the unit as well as the volunteers who will assist during an emergency.

Both the office of the civil defense director and the head of the appropriate municipal department can help with the planning and training of the service unit. As the municipal organization and the plant service unit will work closely together in case of an emergency, it is essential that these units closely coordinate their activities.

INDUSTRIAL PLANT ORGANIZATION FOR CIVIL DEFENSE



Training for the service groups should be handled in four stages. First, the members of the service organizations should receive training as individuals. Second, team training then follows in which the individual's duties within the team and the team functions are stressed. Team training also provides for an interchange of duties within the unit. The third phase is the training of all service units together to assure coordination of activities and to assure the smooth functioning of all the units participating in the program in the event of disaster. A full-scale exercise not only offers excellent practice and training, but will give the members of the unit an opportunity to get an idea of conditions during an emergency. The fourth phase of training for the service units is training exercises designed to train the industrial groups with those of the local civil defense organization, with the groups of neighboring plants or with the municipal service organizations.

Training Material Sources—The following are sources of information and material for use in training the service groups:

FIRE—Municipal fire department; publications from OCDM, Battle Creek, Michigan; National Fire Protection Association, Boston, Massachusetts; National Board of Fire Underwriters, New York, New York; and the National Safety Council, Chicago, Illinois. In some areas firefighting courses are available from manufacturers of firefighting equipment.

POLICE—The local police department, sheriff's office or state police office can assist with training in traffic control, patrol duty, identification, crowd control, and many other duties.

HEALTH AND MEDICAL—The American Red Cross will conduct first-aid courses. The company physician or the municipal health authorities can provide most of the information. OCDM can supplement this and provide information concerning the latest practices. The personnel department should supply the names of employees with military medical experience.

(Continued on page 145)

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Plant Police Services in an Emergency



By James D. Taylor
Director, Plant Protection Activities
General Motors Corporation
Detroit, Michigan

Mr. Taylor joined the General Motors Corporation at the Chevrolet Gear & Axle Plant, Detroit, in February, 1933. He was assigned to the Plant Protection Department. Through a series of promotions he became a Captain and Assistant to the Chief of Plant Protection.

From 1940 to 1946 he saw extensive military service in Australia, New Guinea and the Philippines as a General Staff Officer (Colonel), Southwest Pacific Area, on General MacArthur's staff.

Upon his return from Service he was transferred to the Personnel Relations Staff of the Chevrolet Central office with responsibility for Plant Protection. In January, 1951, he transferred to the Personnel Staff, General Motors Corporation, and was assigned to the position of Associate Director to work on Plant Protection, Fire Prevention and Military Security. He was promoted to his present position in July of 1958. He is a guest lecturer at the OCDM Staff College Course in Industry Defense and Mobilization and has conducted numerous seminars and panel discussions on Industrial Security and Industrial Survival Planning.

In attempting to predict what the requirements for plant police services for the next wartime emergency will be, we must start from a known and accepted base and be somewhat conservative.

We are assured that the next war, if is should come to pass, will come with practically no warning at all, with terrific destruction to a considerable part of our country and with a tremendous death and injury toll. On this premise—that it will come very suddenly and with tremendous impact—planning for plant police services in such a wartime emergency should be done with a very basic and realistic approach to what the conditions might well be under which these services are to be delivered.

Planning for plant police services in an emergency should cover all possibilities for unusual demands on plant police services during *any* emergency, including war, either total or local. War is certainly an emergency, but other types of emergencies, such as natural disasters, occur far more frequently and sometimes with the same factor of little or no warning.

As we now understand the probable results of a major nuclear attack, certain areas would be of little or no further use for a considerable period of time, and a very large number of people would be killed or injured in those areas. The surrounding areas might well be contaminated by radioactive fallout or be involved in the firestorm that would inevitably follow the blast effects of a major strike in the nearby area.

For those areas that were so directly involved, it would seem realistic to "write them off" for any practical use in the immediate future.

In the other areas which escaped direct involvement, however, the fire protection measures taken by persons occupying those areas, plus use of the shelters provided for them as a protection against radioactive fallout, should allow them to survive and to preserve some, if not all, the facilities in their area. It is in these places that preplanning and training will be most productive.

The estimates of the situation, as outlined in general terms above, are unquestionably difficult to impress upon a large segment of our population. Most of us are well aware that it is hard to convince the American people that it could happen just that way. However, this "head-in-sand" attitude cannot be a part of the planning for those charged with continuity of plant police services. Those assigned to the plant police services, from the nature of their work, necessarily have to face and plan for the stark realities—not what they might hope would occur.

Therefore, a well thought out and detailed plan of action to meet any emergency and one which is particularly applicable to your local conditions is a necessity. It should also be a plan which can be rapidly expanded, if and when the need arises. The local disaster, which could occur at any time and which was mentioned above briefly, should be the basis of your minimum plan. The rapid expansion or extension of the services deemed necessary in that plan should be built in so that they can be quickly and efficiently increased for a larger national disaster, such as war.

We, in General Motors Corporation, have done some advance planning and have based it on the very real facts of natural disasters that we have experienced and that we expect to continue to experience. These natural disasters have occurred in various parts of the country. No part seems to be exempt. We have had floods in the Midwest, windstorms and hurricanes in the East, tornadoes in other parts of the country and earthquakes on the West Coast. As a result of our realization that these events would probably continue to occur, we have worked out what we prefer to call a Disaster Control Plan and have incorporated in general terms some reference to what we think are the major problems which might occur. The plan is more or less a guide and is referred to our divisions and plants as a model or check

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list for comparison with their own local plan (or for development of a local plan) to be sure that they have included all elements that they then feel are necessary and adequate to meet their local situation. At the same time it should be readily expandable to meet a more severe need than originally estimated.

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The Model Disaster Control Plan which we developed was put together by a group of Plant Protection Chiefs from representative plants across the country. These men, in many cases, had been through emergencies in their own localities and had developed plans for meeting the disasters they had already experienced. As a result of the combined thinking of these men with many years of experience in the plant police service, much of it actual experience with the type of emergencies we are discussing, we feel that we have developed a practical, realistic and low cost model plan which will enable each plant to cope with their expected local natural disasters and also give them a basic plan which can be quickly expanded into a more comprehensive plan designed to meet a national emergency.

This model Disaster Control Plan was recently sent to our plants and divisions with the recommendations that they review it carefully and then resolve their own situation in general accord with it. It has also been included as an item of instruction and discussion in the program of a week-long school we are presently conducting for our Plant Protection Supervision at General Motors Institute in Flint. The school will run for five sessions this spring and will be continued for a number of sessions in the fall, according to demand.

In brief, our Plan is based on using, to the best possible effect, those facilities and services that we now have in the plants and that are organized to provide such similar services as would be required in an emergency and as are now provided as a matter of course in the ordinary discharge of the employes' regular duties. For instance, Medical would take care of first aid in an emergency; Plant Protection would take care of traffic, control of persons and similar duties, and the Fire Brigades would function against fires or blast effects. Our point in assigning duties in this manner is that we intend to expand or divert as necessary for the emergency, but not to create a dual or separate and parallel organization.

I am sure that many of you will recall that prior to World War II there was an Army concept of rapidly expanding National Guard units from small stand-by groups of trained men to a large, active and able fighting force within a relatively short time. This was done by having "in being" a nucleus for each type group that was felt necessary. For example, an infantry company was staffed in peacetime by three officers and some 60 men. In the wartime expansion this same company would become an organization of nine officers and some 200 to 240 men. Something along this same line is what we have in mind applying our Disaster Control Plan to plants, plant personnel, and, of course, to our Plant Protection Departments.

We all recognize that the number of people we feel

we might need for a wartime emergency cannot economically be carried on the rolls during our peacetime operations. Neither can we afford to rehearse a large group with frequent training periods because of the cost factor. The same cost item governs, to a certain degree, the provision of equipment, such as uniforms, arms, etc. It is, therefore, suggested that, before the initial impact of an emergency strikes, you explore the possibilities of the following ideas and their possible application, in whole or in part, to your particular operation. It is not by any means felt that these suggestions will necessarily apply to all types of operations or all locations, but they may be of some value to plants similar to those of the General Motors Corporation.

Our first action in an emergency, rather than to rush out and employ as many men (and/or women) as we could absorb into our Plant Protection organization, would be to go from a five-day, 40-hour week, to a six-day, 48-hour week, which would increase the force by 20% by this single act with no need for extra uniforms, equipment or personnel. The only extra cost is the overtime pay that would be involved. Furthermore, you have a completely trained and accredited group to rely upon and one familiar with your operations and personnel.

Carrying this same action one step further, if you increase the workshift hours from eight hours per shift to 12 hours and make it a five-day week, you increase your workforce by 50% with no additional requirements, as listed above, except the increased cost in pay for the men involved. The next and most logical step is six days and 12 hours, and you have increased your force 80% with no further outlay, as previously listed, except the overtime.

There should be one day off per week, figured into any schedule without exception, regardless of how long or short the emergency may be.

It is not recommended that the expedient of increasing the days and hours for the existing force be continued beyond a maximum of six months. In many cases where the workforce consists of predominantly older men, this expedient should not be used beyond 90 days.

The very practical reason for making this warning statement regarding the length of time that men can be worked on the longer hours is that it has definitely been proven that beyond a certain length of time the excitement of the emergency wears off and the men tire, thus, their efficiency drops and you do not get the standard of security for which you are paying. There is another factor, too, in that the cost for the overtime is warranted only when an actual and very real emergency exists and no other quickly available and acceptable means can be found to meet this particular problem.

In referring to older men, I mean that the average age of *all* those assigned to the Plant Protection workforce will average out as *over* 45 years of age. This is the mean or average between a hiring age of 25 years and a retiring age of 65 years. We have found, through actual application of this theory, that a force which indicates

(Continued on page 144)

Industrial Medical Services in Disaster

Norvin C. Kiefer, M.D.
Chief Medical Director
The Equitable Life Assurance Society
of the United States
New York, New York

Lee N. Hames Secretary, Committee on Industrial Health Emergencies American Medical Association

Chicago, Illinois



After graduating from the Medical School of the University of Michigan, in 1930, with a degree of Doctor of Medicine, and receiving the degree of Master of Public Health from Johns Hopkins University, Dr. Norvin Charles Kiefer, has had a long and distinguished career in the fields of health and disaster planning.

He is Chairman of the Committee on Industrial Health Emergencies of the Council on Industrial Health of the American Medical Association and a member of the Civil Defense Committee of the Industrial Medical Association. He serves on several Advisory Committees to the United States Public Health Service. He was President of the National Health Council 1958-59 and has been President of the Greater New York Safety Council since December 1956. His activities in disaster planning began in May 1948 when, as a Commissioned Officer in the United States Public Service, he was transferred to the Office of the Surgeon General to develop a new program of Health Emergency Planning for the Public Health Service. Shortly after this he was made Associate Medical Advisor, and later Medical Advisor, to the Office of Civil Defense Planning, Office of the Secretary of Defense. In 1949, he was appointed Director of the Health Resources Office of the National Security Resources Board and in that capacity held among his repsonsibilities that of planning for health and special weapons defense for civil defense. In 1951 he was appointed to be the first Director of the Health and Special Weapons Defense Office of the Federal Civil Defense Administration. In 1953, he was appointed Chief Medical Director of the Equitable Life Assurance Society of the United States, where he has charge of life insurance medicine, employees' health, medical diagnostic and chemical laboratory, health education and medical research

Mr. Hames has spent more than 10 years in various administrative capacities in the voluntary health field. For the past two years he has been employed as an administrative assistant in the Council on Occupational Health of the American Medical Association. He is secretary of the Council's Committee on Industrial Health Emergencies The main purpose of this committee is to devise a "Guide to Developing an Industrial Disaster Medical Service." He graduated with a Ph.B. from the University of Wisconsin, and has participated and assisted in the OCDM Staff College Course in Industry Defense and Mobilization.

Modern weapons are characterized not only by their unprecedented direct power of destruction on targets but also by their capability of quick production of great devastation over a huge surrounding area. Location of a plant or office outside a likely target area therefore does not assure protection against wartime catastrophe, and it probably increases the industry's responsibility for readiness to provide assistance to both itself and surrounding communities.

Of even more immediate importance is the constant vulnerability of an industry to peacetime disaster. Natural disasters—tornadoes, floods and epidemics, for example—may strike with a fury unmatched by anything man can manufacture but fortunately in many cases they give at least brief warning of their impending arrival.

Certain industries, by the nature of their operations or products, have increased susceptibility to disasters arising from other-than-natural causes—but none is really immune to them. An unfortunate trait of most such disasters is that they occur suddenly, with little or no warning. Extensive safety programs in modern American industry have, in general, reduced to a minimum the hazards that can be anticipated by technical knowledge. In general, serious disasters are most likely to arise from unexpected, often unpredictable, sources.

No generalizations can safely be made with respect to the likelihood of another major war or to the possible premonitory signs of attack on American cities and other target areas. It is logical to conclude, however, that if America is not well-prepared for localized peacetime disasters, we certainly are tragically unprepared for wide-spread enemy attack on our civilian lives and property. This conclusion inevitably applies to American industry in this highly industrialized nation.

The first responsibility of industry, following a disaster, is to institute immediately every possible measure to contain the disaster, to halt its spread. The second responsibility is to care for employees and others who have become disaster casualties. The third responsibility—especially in wartime—is to get back into operation as quickly as possible.

Any industrial disaster service must be fully prepared to meet all three of these major categories of responsibilities—in order, but as nearly simultaneously as possible. To do so demands extensive advance preparations for various types of disasters.

This cannot be a haphazard, hit-or-miss preparation. There must be a carefully worked-out and recorded plan, and it must be a living plan. A "living plan" demands periodic review followed by any indicated revisions; assignment of specific responsibilities and establishment of lines of succession; continuous training of employees for their catastrophe duties; real team-work among various departments; and full approval and support by all levels of management.

Plant security, fire control, rescue operations, communications, transportation, first aid and medical services, and others are indispensable elements of the industrial disaster plan. The nature of a disaster may be such that only one of these services is necessary, or all of them may be required. The much greater likelihood of the latter need demands full team-work by all of these services. Such coordination cannot suddenly be brought into being at the moment of catastrophe. It must be carefully planned, recorded and practiced long in advance of any need for it.

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The Industrial Medical Services in a simulated disaster at the General Electric Company, Evandale, Ohio, during the Fourth Annual National Industrial Mutual Aid Conference.

In an industrial disaster, where injuries to employees have occurred, prompt and efficient first-aid and medical care for them transcends in importance any other activity except, as previously pointed out, prevention of spread of the disaster and consequent production of more casualties. The promptness and effectiveness of such casualty care will depend on a pre-existing, thorough medical and first-aid "living plan," carefully integrated with all other emergency services in the industry in order to assure full effectiveness of operation.

The Committee on Industrial Health Emergencies of the American Medical Association's Council on Occupational Health is urging all industrial medical departments—and industry in general—to develop comprehensive plans for both peacetime and wartime disasters. One of the Committee's projects is the preparation—now well in progress—of a "Guide to Developing an Industrial Disaster Medical Service."

This publication will not constitute a disaster plan but



Simulated disasters, such as this one at the Flight Propulsion Plant, General Electric Company, Evandale, Ohio, are excellent means of testing the capability of the Industrial Medical Services.

rather will be a guide and stimulus to developing such a plan in each individual industry. It will be in the form of a questionnaire which will have the purpose of encouraging the industrial medical department to evaluate its own status of readiness for disasters-and where the evaluation reveals inadequacy of plans, to encourage specific additional activities. For example, one of the questions will ask not just whether some one person has been named responsible for all medical decisions in any emergency, but specifically who has been so named and who his alternate is-with location and telephone number of the office and residence of each. There will be asked not only whether Emergency Medical Tags are available but how many, where they are kept, who will deliver them to the user, who will retain a copy of each tag and where these copies will be delivered to and retained.

There will be approximately fifty questions, with about an equal number of subquestions. Sample medical tags, forms, personnel tables and similar materials will be appended.

It will be recommended that in the medical department each person with supervisory responsibilities in disaster services fill out one of these questionnaires and that at least master plan copies be distributed to other company departments with potential disaster functions.

The Guide has been prepared for peacetime disasters and will not be adequate for a full-scale, atomic attack disaster plan. But if it is properly used, it will provide a sound basis on which to build a plan for medical services following an attack disaster. To the basic plan would have to be added special plans to meet, for example, radioactive fall-out problems. Also, there would have to be added consideration of post-attack activities when large numbers of casualties might have to be fully cared for on the premises because of unavailability of hospital beds—unavailability due either to overwhelming hospital casualty loads or to actual destruction of all-near-by hospital facilities.

In devising the questionnaire, the Committee on Industrial Health Emergencies was motivated by the conviction that many—perhaps most—companies have no disaster plan, have a grossly inadequate plan or have one that is gathering dust on a shelf. Even where an active plan does exist, the Committee doubted that it actually was a comprehensive "living plan" in more than a few instances. Furthermore, the Committee believed that the questionnaire method would dramatically emphasize, to the industrial medical department, the weaknesses and omissions in its disaster plan.

The purpose of this publication will differ from that of the usual type of questionnaire. There is no intention to request respondents to return their questionnaire for nation-wide analysis and interpretation. The sole purpose of the questionnaire is to serve those who fill it out to evaluate their own plans, to revise or elaborate these plans, and finally to provide a written record of essential information for use in emergencies.

It is suggested that in developing a medical plan for peacetime industrial disasters, certain basic assumptions should be made:

- There probably will be little or no advance warning of a disaster.
- Evacuation of casualties can be accomplished within a relatively short time and no arrangements for continuing definitive medical treatment and aftercare need be made.
- The plan will not provide for atomic disasters, but nevertheless it must be integrated with general community and Civil Defense disaster plans.

In developing the plan, it will be necessary to keep in mind the purposes of the services to be planned. In general, these are:

- 1. Rescue of the injured.
- 2. Provision of first aid.
- 3. Triage (sorting) of the injured.
- Dispatching to a hospital those most seriously injured.
- Provision of such care as may be required for the less seriously injured.
- Assurance of full cooperation of fire, rescue, security, communications, traffic control, and other essential services.

Also, in developing such a plan, careful consideration must be given to the possible availability of nearby hospital facilities with relationship to the number of casualties in a disaster localized in an industrial plant. For example, if 1-25 casualties were encountered, hospital care almost certainly would be quickly available. If there were 25-100 casualties, more than one hospital probably would have to be used and efficient transportation and medical care might not be immediately available in some communities. If casualties numbered substantially over one hundred, serious shortages of hospital care would be encountered in all but large cities. Emergency surgical procedures and continuing medical care probably would have to be carried on, at least temporarily, within the plant.

A number of employees should receive sufficient first-aid training to enable them to carry out assigned first-aid tasks during and following an emergency. Refresher courses should be given periodically. Training of new employees also should be provided.

An inventory of medical and surgical supplies should be made and evaluated in relation to estimated disaster requirements. If necessary, existing supplies should be supplemented to meet at least minimum estimated needs.

"Dry runs" of any disaster plan are necessary as a test of the probable efficacy of services in an actual disaster.

SUMMARY

It is not possible in a short article to explore to any substantial extent the detailed needs in an industrial medical disaster plan. It has been emphasized that an essential requisite to prompt and effective emergency medical services is a comprehensive, carefully pre-recorded disaster plan, as well as a predetermined disaster team organization and continuous training of team members.

It has been pointed out that an adequate plan for peacetime disaster medical services is constantly necessary and that such a plan can form a sound basis for expansion for wartime post-attack services.

A projected American Medical Association "Guide to Developing an Industrial Disaster Medical Service" has been noted. It is believed that this Guide, which will be in the form of a questionnaire, will be of distinct value to industry in stimulating and developing a disaster medical plan.

With respect to such a plan, the following points have been emphasized:

- The plan must be reviewed periodically, and lists of names and addresses of key personnel must be kept current.
- Sufficient copies of the plan must be made available to all departments in the plant for wide distribution.
- "Dry runs" must be made under realistic conditions.
- Cooperation between departments and units within the company must be assured by top management.
- Many persons will have to be trained to serve on first-aid teams.
- An inventory of medical and surgical supplies, equipment and facilities should be made, and such items should be increased, if necessary, to meet at least minimum estimated disaster needs.
- 7. Companies that do not have any disaster plan might do well to start with a medical services plan for peacetime disasters. This should be expanded as soon as practicable into an overall plan for full company disaster services in peacetime—and then into a full-scale plan for services following enemy attack.
- The plan must provide for cooperation with community Civil Defense and other disaster services.

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INDUSTRIAL SECURITY, JULY, 1960

Rescue Service in Industry



By Norman D. Ferrari Security Officer and Coordinator of Defense Weirton Steel Company Weirton, West Virginia

Mr. Ferrari has been with Weirton Steel for 33 years, building his way into the firm from laborer to his present position. Weirton Steel is a division of National Steel Corporation and Mr. Ferrari now is Security Officer and Coordinator of Defense. He helped to develop the comany's Fire Protection Unit. During World War II, he taught plant protection throughout Weirton's plants. He is a former County Commissioner of Hancock County, West Virginia, and has been active in assisting other companies and neighboring cities in preparing for civil defense. He has served as guest lecturer at the OCDM Staff College Course in Industry Defense and Mobilization and at numerous Industrial Survival Conferences throughout the Nation.

Rescue service in Weirton Steel Company plants is one of the most important parts of the company's defense and security because the company feels it has the duty not only to protect its employees but also to be prepared to perform rescue work in case of any disaster.

The most important requirement in rebuilding a wartorn plant or one that has been damaged by explosion or some other disaster is people. New equipment can be purchased, but personnel "know how" is the key to getting back into production. This is very important to the defense of American Industry, in being able to get back into operation after a disaster and make the materials that are essential to the welfare of the nation.

Very early in setting up a defense program for our plants, Thomas E. Millsop, who was President of Weirton Steel, (now President of National Steel Corporation, Weirton's parent firm) and E. O. Burgham, Vice President of Operations, (now Chairman of Weirton Steel Company) were concerned with overall plant security and particularly emphasized the need for a trained rescue team so that in case of war or any natural disaster, the company would be able to cope with the rescue of employees and do everything possible to protect them in all phases of security, especially in the rescue service. Under A. J. Berdis, now President of Weirton Steel, the company continues to give full support to the program.

Our first step in developing our rescue program was to find a school where our employees could be trained. We arranged to send twelve of our employees to the National Civil Defense Training Center at Olney, Maryland, to be trained as instructors so they could return and train rescue squads and teams in our plants.

The National Civil Defense Training Center was operated by FCDA and was established in 1951. Buildings were erected as though they had been bombed and included a wide variety of structures such as a two-story wood frame house, a five-story reinforced office building, a two-family brick duplex, a three story wood building and a typical shopping center including

neighborhood small stores and a theatre. With this type of training environment our employees got the feel of actual disaster.

The classes started at 8:30 a.m. and ended at 5:00 p.m. Training and rescue films were shown at night and numerous exercises were conducted. Students were assigned to squads, each with a specific responsibility.

The students were given orientation to rescue trucks, rope knotting and coiling, radiological measuring instruments, casualty hauling and related subjects. This was followed by putting into practice what they had been taught.

They were taught the care and use of ladders, stretcher blanketing, lashing, handling casualties and use of improvised stretchers. Special instruction was given in methods of finding trapped victims, rescue from limited heights and rescue from basements.

Exercises were conducted on emergency control of damaged utilities and lifting devices, breaching, shoring, bracing, shafting and trenching debris.

Students were given a complete course in methods of instruction and the use of visual aids. They practiced basic fire flighting and the use of masks and were required actually to put out fires, in a smoke-filled room wearing masks and to rescue victims. A graduation exercise included an assignment by each squad with instructors observing and evaluating.

During the second week of the course students were trained in the use of rope and tackle—rigging, reeving and lashing. They learned tackle lowering, use of breeches buoys, elevator and basket lowering. They used acetylene torches, power circular saws, chain saws, generators, pumps, pipe cutters, bolt cutters and power telephones.

They learned tunneling under debris, first in a classroom lecture, then in actual practice.

A final night-time exercise was conducted, to which the public was invited. The student rescue teams were required to find and rescue victims in the imitation bombed out buildings. A critique of the field exercise

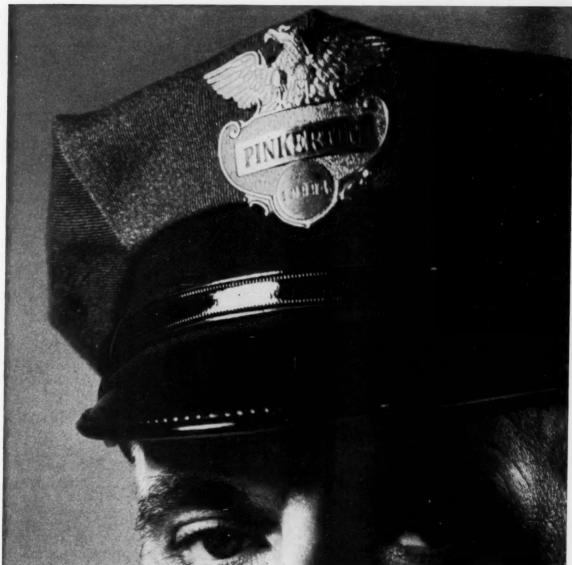
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The Plant Welfare Program in Emergency



By George H. Simpson

Manager, Security
International Business

Machines Corp.

New York, New York

Mr. Simson began his career with the IBM Corporation in 1937 following his graduation from Brown University. From 1941 to 1945 he served with the U. S. Navy, obtaining the rank of Lt. Commander.

He is the IBM representative to Electronics Industries Association, a member of the National Fire Protection Association Committee for the Protection of Electronic Computer Systems, and is a member of the Board of Directors of Goodwill Industries.

He is a charter member of the American Society for Industrial Security, was Chairman of the Second Annual Convention in 1956, served as First Vice President in 1957 and is presently a member of the Board of Directors.

The term "welfare" is used with a variety of meanings in the field of personnel management. In a broad sense, all good personnel management practices are directed toward the well-being of employees. However, for purposes of civil defense and survival in the event of enemy attack, the term "welfare" takes on a very special meaning.

Among the most important contributions that industrial plants, institutions, and other large facilities can make to civil defense are resources useful for emergency care of people in time of national emergency. At IBM we have studied the emergency welfare program of the National Plan for Civil Defense and Defense Mobilization with a view to relating welfare resources in our company to the civil defense welfare problem and program. It is my purpose, therefore, to (1) describe certain aspects of the emergency welfare program being developed by the Office of Civil and Defense Mobilization, and (2) discuss some of the plans which are being studied and implemented at various facilities of IBM.

The National Emergency Welfare Program—An attack on this country will destroy, for millions of people, the complex economic and social arrangements through which they now maintain themselves with food, housing, clothing, transportation, communications, employment and other necessities of life.

The objective of civil defense welfare services is to assure the immediate, temporary care of people in emergency need. Everyone unable to provide for himself is to be assured at least the minimum of food, housing and other essentials necessary to sustain life. Without this certainty, people cannot maintain the strength and will to continue to produce and support the Nation's defense effort.

To meet this objective it is necessary to establish, develop and maintain civil defense welfare organizations in all states and localities throughout the country. They must be prepared to provide—within a matter of hours, for varying lengths of time, and wherever they may be needed—the essentials of life following an attack. They must organize and prepare to (1) furnish emergency feeding, housing and clothing to large numbers of people; (2) provide registration and information services that will help separated family members to reunite; (3) provide for unaccompanied children, the aged, the handicapped, and other groups needing specialized care or services; (4) supply necessary financial assistance, and (5) provide counseling and referral services to families and individuals.

Civil defense programs are, in general, based on plans and preparations for protective shelter from physical harm, and evacuation from target areas. These measures require preparation for operating welfare services both within a city and in areas beyond the communities surrounding target areas. Both private dwellings and larger structures in these areas would be needed for shelter and evacuation purposes.

Organization of Community Civil Defense Welfare Services—In practically all states and localities, the state and local departments of public welfare are assigned the civil defense welfare service responsibility in addition to their regular responsibilities.

Organizational units called welfare centers, covering designated geographical districts, are to serve as the organizing and operating nuclei. Plans and preparations are to be made for the use, through welfare centers, of all suitable private dwellings and other facilities and structures available for care services. Plans must be made for the necessary services required, based on the normal population of each district. Needs based on the expected influx—from other areas—of people, must be anticipated as well. Arrangements for registration and information services and plans for family rehabilitation and financial aid should also be made.

Welfare centers will support and augment the resources of industrial plants and institutions by providing a central location where all welfare services are available, and by furnishing services such as central kitchens and supply and personnel requirements, and through mobile facilities.

The Need for Resources of Industrial Plants and Other Facilities Useful for Welfare Purposes—The urgency and size of the problem of providing emergency necessities such as food, clothing and lodging in the event of an attack, require preparations that will make maximum use of every possible resource at a safe distance from the target area. Offering such resources are industrial plants, schools, institutions, churches, theatres, meeting halls, offices, warehouses, and private dwellings.

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Particular observation will be necessary to determine the potentials for such service in industrial plants, institutions, and other facilities which have never before been used to feed, house, or otherwise provide emergency survival needs for people.

We recognize that not all facilities are suitable for such service and also that maintenance of production will be a primary objective of industrial plants. It may well be, however, that for a period of some weeks, continued production is not possible. For this reason and because the survival needs of the people in some cases might virutally depend on an industrial facility, plans should exist for the utilization of industrial plants in this program. This would be particularly true in the use of plant feeding facilities, space for emergency housing, distribution of clothing, etc. Industrial space might also be required to carry on the programs of reuniting families and other emergency services.

Industrial facilities will also be expected to contribute, insofar as they will be able to do so, toward the survival of employees, and possibly their families and evacuees from other communities, by providing protective shelter from dangers of blast, heat, radiation, fallout, and chemical and biological agents.

Individual Self Help-A basic continuing principle in civil defense is that each person personally will take measures to assure his own survival. There is the possibility that under conditions of emergency chaos, and paralysis caused by radioactive fallout, there will be gaps-shortages and delays-in the availability of essentials of life through even the best prepared civil defense organizations. OCDM recommends practical measures which individuals can take to meet welfare survival needs during the first days following an attack. These measures include provision for shelter from radioactive fallout, a two-week supply of food and water, cooking and eating utensils and equipment, fuel, clothing, bedding, first aid supplies, special medicines (if required by chronic illness), sanitation supplies and equipment, and a battery-powered radio. Essential survival items should be stored in the home shelter or

some convenient place where they can be moved either to the shelter or to the car in case of evacuation.

Other important advance actions include knowledge of warning signals and the community's emergency plan, the training of at least one family member in first aid and home care of the sick and injured, and keeping automobiles in good running order with at least ½ tank of gas.

By encouraging these measures, industry will enhance the sum total of survival resources available in an emergency. Public confidence in civil defense measures will be increased as a result of the combined individual and industry participation in a sound program for self-help. Individual and community morale is higher with the assurance that vital necessities are available in case of an emergency.

Registration and Information Services—OCDM points out that an essential civil defense function is the provision for registration, information and welfare inquiry services. Generally, these services include: (1) Registering persons at welfare centers and other appropriate locations to facilitate the reuniting of separated family members; (2) Answering inquiries from relatives and friends—no matter where they are located—regarding the condition and whereabouts of residents of target-reception areas; (3) Disseminating general information affecting the welfare of people. Since these services are vital to individual and family morale and, therefore, to the total civil defense effort, they must be provided as promptly and adequately as possible.

Financial Assistance and Rehabilitation Services—A civil defense emergency will create a multitude of personal problems. People will require help through a financial assistance and rehabilitation service, if family life is to be reestablished and return to work expedited. Attack will create personal problems resulting from death, injury, or radiation sickness of family members. These calamities will in turn cause loss of earnings. Destruction of plants and other places of work will result in unemployment and disruption of income sources other than employment. Disorganization of normal community services will create many personal problems.

The civil defense welfare program of family rehabilitation and financial assistance is designed to help start people toward self-rehabilitation. It must be continued until long-term help can be provided, where necessary, through other programs and agencies.

The financial assistance and rehabilitation service, like the other civil defense welfare services, will operate through the welfare center organization structure.

Responsibility of Government—The Office of Civil and Defense Mobilization has directive and coordinative authority for emergency welfare services. Under this authority there is a direct responsibility of the Department of Health, Education and Welfare through planning with other governmental and private agencies for the operation of emergency welfare services.

THE WELFARE ROLE OF INDUSTRIAL PLANTS, INSTITUTIONS, AND OTHER LARGE FACILITIES

Support of Individual Self-Help Measures by Industrial Plants—We stated above that individual self-help measures can be the first-line resource for welfare elements of survival. Corresponding measures can be taken also by industrial plants and other facilities by way of basic measures for protection of the people within them.

An important first step that plant managers can take is to encourage individual self-help efforts. For example, interest can be generated by making available or bringing to the attention of employees, literature published by the Office of Civil and Defense Mobilization and State authorities concerning individual preparations for an emergency.

Examples of actions that plants, institutions and other facilities can take to aid individuals are the following: (1) adapt, supply, and maintain facility vehicles for use in an emergency; (2) maintain adequate food supplies for use in an emergency; (3) anticipate and arrange for emergency supply of water; (4) maintain adequate supply of paper cups or containers; (5) provide for emergency medical supplies; (6) designate shelter areas, etc.

Plant and Institution Welfare Measures Can Serve Others in Addition to Employees and Residents—Industrial civil defense welfare measures are to serve primarily the people who are part of the plant, institution, or facility operation. Such measures might also include provisions for some or all of the families of employees. Plans and preparations might be made with a view to service to the surrounding geographic area, or with a view to participation in reception area preparations for the care of evacuees from target areas.

The need and capacity of a plant or institution to prepare for service as a protective shelter, either for its own personnel or for others as well, will require preparations to provide emergency feeding, and perhaps even emergency lodging in the shelter area.

Civil Defense Welfare Organization in Plants, Institutions and Other Large Facilities—A welfare service is a necessary component of all civil defense organizations, including those in plants, institutions, and other facilities.

Plants and other facilities in areas to be evacuated should include in their plans procedures for evacuating their plants. The understanding, participation, and confidence of the organization's employees—and of residents, in the case of institutions—in such plans and preparations, must be continually maintained. The plant and individual self-help welfare measures outlined above are one aspect of the job to be done.

IBM's Emergency Planning Program—In IBM, our civil defense efforts are included within the broader framework of what we have officially labeled as "IBM's Emergency Planning Program."

In addition to civil defense, IBM's EPP is designed to alleviate hardships which might be incurred as a result of fires, explosion, tornadoes, hurricanes, or other catastrophes. Although our program centers around our concern for IBM personnel and their families, we are also acutely aware of the need for continuity in our business efforts and of our corporate responsibility to the community.

Before briefly describing various aspects of IBM's EPP, some of the underlying reasoning imbedded in it might be significant.

First, the plan was designed to be as flexible as possible. Basic policies applicable to non-war disaster situations which arise and have arisen certainly provide a foundation for meeting swiftly and as effectively as possible a more deadly occurence, if and should it ever come to pass.

Second, the plan was predicated on the belief that while it was necessary and desirable to outline broad principles and rules anticipating possible emergency situations, it was far more necessary to decentralize primary responsibilities for decision-making because there is no substitute for on-the-spot good judgment.

Third, no plan will prove successful without adequate backing, either in terms of moral support or human or physical resources. Consequently, our program had to be made known to all personnel, specific duties had to be assigned, equipment had to be furnished, and training had to be given on a continuous basis.

Finally, we hoped to achieve among all our people a sense of confidence, the recognition that while no guarantees are possible there can nevertheless be some assurance that we intend and are geared to doing the best humanly possible whatever the circumstances may be.

Specifics of IBM's Emergency Planning Program—IBM's basic program covering all plant, laboratory, and branch office locations throughout the United States has been operative for several years. The major areas covered by the program are as follows:

- Administration—Emergency Coordinators have been appointed with the responsibility for the overall program on a divisional as well as a facility level. In addition, Advisory Staff personnel have been appointed to represent the large number of departments within these specific areas. Fire, first aid, rescue, damage control, evacuation, and other essential training has been provided on a continuous basis. Management has been advised of their responsibility to designate succession of responsibility to provide continuity. Off-site locations have been designated to function as emergency operational headquarters.
- Personnel—In case of major emergency, it is essential that some provisions be made for locating, accounting for, communicating with and rendering assistance to employees both at home (Continued on page 147)

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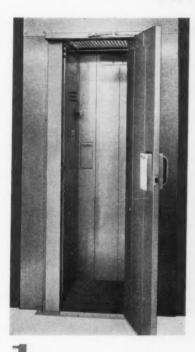
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selection of a predetermined push button combina-tion is made (upper photo). A card-key, imprinted with an invisible code is then inserted into the slot (bottom photo). This procedure, in an instant, re-leases the second door and passage through the booth is completed. Any deviation in this predeter-mined routine or sequence sounds a remote alarm; a switch on the control panel can also be set to lock both doors if desired.



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Wardens in Industrial Plants



By Robert J. Goddard Manager, Security Hughes Aircraft Company Culver City, California

Mr. Goddard has been engaged in various phases of law and security enforcement work for the past 16 years. A former special agent of the FBI and World War II security officer, he joined Hughes in January 1951 and for eight years, prior to his present position, was Manager of Personnel Security—with immediate responsibility for civil defense at Hughes. As Manager of Security—General Office, Mr. Goddard is functionally responsible for development, implementation, and surveillance of the companywide security programs—including corporate direction of the industrial defense and disaster control programs.

The Hughes Aircraft Company, as the nation's largest supplier of military electronics equipment, naturally is vitally interested in industrial defense.

To dispel any thought that we may be peering at wardens with World War II eyes, we wish to point out that the possibility of such a viewing was blinded and blasted by the hydrogen bomb.

From 1950 to 1956, we fully embraced the warden system but, from 1956 to the present, we shifted its protective responsibility to supervision. Since this policy change did not occur overnight, and the warden system still may be widely and properly used in industry, we would like to take a look at the past.

September 1950. Korea, war, police action, international discord—call it what you will—the Hughes Aircraft Company civil defense program went into high gear. From the outset, the warden organization was the backbone of our civil defense effort. The heavy responsibility of protecting our employees and property in the event of natural or war-caused disasters rested squarely upon the shoulders of our wardens. These men, through the years, gave freely of their time and talents to develop the warden system, recruit warden personnel, maintain records, and further our civil defense training program for all employees. We salute them.

Our General Manager gave full support to the civil defense program, and key management employees were most helpful in the development of the warden system. Recognizing and acknowledging that "Civil Defense is a very important program here at Hughes Aircraft," they issued bulletins to their superintendents, department heads, supervisors, and foremen urging them to make every effort to support our warden organization. With such encouragement from the top, it is not surprising that our wardens tried to give us—and in large measure succeeded in giving us—the best warden system in industry.

Plant sites were divided into areas which in turn were subdivided into zones depending upon geographic

location, function, and type of occupancy. Plant, area, and zone warden responsibilities were placed upon the Chief Warden, Chief Area Wardens, Area Coordinators, and Zone Wardens. Each Zone Warden, responsible for the safety of from 75-100 employees, organized his zonal warden group to include an Assistant Zone Warden and evacuation, stair, exit, first-aid, fire, shelter, equipment, communications, and security wardens.

The Chief Warden was responsible for (1) the training and protection of the warden organization and other employees, (2) the training, administration, and direction of fire, rescue, first-aid, and radiological monitoring and detection squads.

The Chief Area Wardens were responsible for supervising the training of wardens and other employees, emergency shutdown procedures, evacuation of employees to shelter areas, and direction of emergency fire-fighting, first aid, and rescue work pending arrival of specialized squads, as well as prevention of panic.

The Zone Wardens and their aides were responsible for directing the orderly evacuation of employees to the shelter areas; shutting off valves and switches; performing emergency firefighting, first aid, and rescue work pending arrival of specialized squads; and watching for and controlling panic.

All newly recruited warden personnel were given instruction in the nature and effect of thermonuclear warfare and their duties and responsibilities. They were provided with CD armbands and literature. Fire wardens were instructed in the use of emergency firefighting equipment during 2½-hour training periods. Two thousand employees, including first-aid wardens, received first-aid certificates. Chief Area Wardens held monthly meetings and a monthly CD newsletter was disseminated to all warden personnel. Warden meetings were arranged on the various shifts and local civil defense authorities were invited to address the groups. Question and answer periods proved useful in clarifying civil defense aims and objectives.

Command post exercises were organized to test the effectiveness of the warden system. Various CPX's involving a simulated natural disaster (dangerous flood condition), an airplane crash into buildings, and an H-bomb strike were carefully planned and executed. CPX plans, outlining the nature of the disaster, time, duration of exercise (usually 30 to 45 minutes), and duties and responsibilities of participating personnel were disseminated well in advance of the proposed exercises to warden, police, fire, engineering, medical, and maintenance personnel. During the course of these exercises, each zone warden sent two messages to his Chief Area Warden to report upon simulated damage, injuries, and assistance required in his area. The Chief Area Wardens, in turn, sent messages to the Disaster Control Center for assessment and necessary action. After each exercise, objective critiques were held to improve future plans and procedures. Apart from the CPX's, we executed, at various times, evacuation drills in plant buildings.

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Intent upon improving communications between corporate security and the warden organization, we established a more effective newsletter format entitled, "Data-Log." Attractively presented in three-ring binders, the Data-Log enhanced the prestige of the warden



Robert J. Goddard, Manager, Security—General Office (right) and Eric Rhodes, Education Department, inspect Civil Defense Trainer's Guide display panels.

organization and created a firm bond of solidarity between security and warden personnel. Supplementing "Hughesnews," handouts, and other communications, the Data-Log contained timely civil defense information for all wardens. At unscheduled but frequent intervals, articles concerning defense warning signals, radio-active fallout, evacuation procedures, and civil defense training for employees were published in the Data-Log.

Assured that our communications system, as provided by the Data-Log, was adequate to meet the need, we then took a long and hard look at the entire civil defense program. It gradually became apparent that, with the advent of bigger and "better" bombs, the possibility of providing adequate shelter in plant areas would be



Civil Defense plant evacuation exercise during simulated dis-

economically infeasible. Further, the vision of our wardens spreading their protective arms over employees in the face of a hydrogen blast suddenly appeared sadly ludicrous. Therefore, after much probing and deliberating, we concluded that our civil defense effort must be directed toward plant evacuation and employee education in self-help and family plans.

Following this concept, we decentralized our civil defense effort. The main features of the new program became:

- Shifting of responsibility from wardens to supervisors.
- Evacuating and releasing employees at the "yellow" alert to allow them to reach areas of greater safety.
- Emphasizing the education of each employee in the protection of himself and his family.

To provide informative civil defense training material for our supervisors, we, with assistance of our art and education departments, developed a trainer's guide entitled, "Basic Survival Techniques." Devised as a two-part civil defense preparation and presentation guide, it includes many attention-arresting psychological, visual, audio, and mechanical aids to overcome the bane of civil defense education—apathy. It is directed toward opening the minds of trainees, creating receptiveness, and enabling the trainer to present a stirring and convincing message.

The preparation section of the trainer's guide consists of a conversational text that explains a series of colored slides. The trainer assimilates this material, but does not attempt to commit it to memory in the same form or words. He is encouraged to inject his own personality into the presentation, but is cautioned against being overly dramatic. It is felt that the multiple-sense approach of the presentation, relying as it does upon the heat of a flash bulb, the wail of a siren, the click of a Geiger counter, and the sight of an H-bomb explosion, creates sufficient emotional impact.

(Continued on page 148)

Industrial Radiological Defense Services



By Harold D. Knapp Government Security Officer Radio Corporation of America Camden, New Jersey

Mr. Knapp is a member of the board of directors of ASIS, and National Secretary, and has had more than 30 years of experience in the field of sales and advertising in electronics. After attending Antioch College at Yellow Springs, Ohio, he started his career with Westinghouse Electric, Pittsburgh, Pennsylvania, in January of 1928, as an Electrical Engineer. In 1930 he transferred to RCA, Camden, New Jersey, as sales engineer, and served successively in field sales promotion, export advertising, and as manager of Advertising, Sales Promotion and Public Relations for RCA Defense Electronic Products. He also served for two years as Manager of Security Plans and controls for RCA Defense Electronic Products. He is former chairman of the Publications Committee of ASIS.

Modern industry is faced with new hazards both in peacetime and in wartime. These new hazards are created by the use of atomic energy.

Reports of radiation injury in peacetime date all the way back to 1896 when Henri Becquere first observed and reported on radioactivity of uranium. Although Albert Einstein published his famous equation and formula concerning the conversion of mass into energy in 1905, it was not until 1942 that the first controlled chain reaction was obtained in the atomic pile at the University of Chicago. Knowledge of radiation hazards was well established, but it was not until the atomic bomb was dropped in Hiroshima and Nagasaki that the effects of radiation were demonstrated in a most impressive manner. Since World War II, an increasing number of companies are regularly using atomic energy and isotopes in their manufacturing processes.

With the increasing peaceful use of atomic energy and the established use of atomic and nuclear devices in modern warfare, it is doubly incumbent on American industry to take precautions which will insure safe working conditions in peacetime and insure survival of employees in wartime.

In RCA we early recognized the necessity for development of a company radiological defense plan in addition to regular peacetime precautions for handling and use of radioactive materials and prevention of radiological injury to employees. To obtain guidance and assistance in developing our company radiological defense plan, members of our Security Staff went to the National Operational Headquarters of the Office of Civil and Defense Mobilization in Battle Creek, Michigan. There we conferred with the Director of the OCDM Industry Office who has the responsibility for developing and promoting the National Program for Industrial Survival. We also visited with officials who

are responsible for developing the over-all radiological defense program for the Nation and other appropriate OCDM officials. We learned about (1) the National Program for Radiological Defense in the event of a thermonuclear attack, (2) what industry is expected to do in such a program, (3) how to organize and operate a radiological monitoring program in our company, (4) how to obtain radiological training for our employees, (5) what equipment would be needed, (6) how to cooperate with and assist local government in planning for community radiological defense and (7) how to inform and educate our employees in radiological defense methods.

In addition to the usual plant protection services such as fire, police, medical, rescue, wardens, and welfare, it was clear that we must establish in our company a new plant protection service to meet the hazards of modern warfare—a company "radiological defense service."

The object of this article, therefore, is to report (1) what we learned about the plans which are being made by the Federal Government to insure radiological defense, and (2) to outline for industrial security and plant protection officials, a basic plan which can be used as a guide in the preparation and elaboration of their own company radiological defense plan. It is obvious that a good plant radiological defense plan must be tailored to the specific needs of the individual company. Therefore, the information presented herein is of necessity fairly general in nature.

The National Radiological Defense Plan—The National Plan for Civil Defense and Defense Mobilization defines "radiological defense" as the organized effort, through detection, warning, and preventive and remedial measures, to minimize the effect on the people and resources of the United States, of nuclear radiation in the event of enemy attack or other major nuclear disaster.

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Radioactive fallout is the surface deposition of radioactive material which has been explosively distributed in the atmosphere by the detonation of a nuclear weapon. When a bomb is detonated at heights which allow the fireball to come in contact with the ground, great quantities of pulverized and vaporized material are carried up into the atmosphere. The cloud then contains a vast amount of radioactive dust particles of all sizes, from submicroscopic specks to visible grains or flakes. The larger particles settle to the ground rapidly, the smaller more slowly. This is fallout.

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An attack with surface-burst nuclear weapons on the United States would seriously contaminate vast areas of the Nation with radioactive fallout. Radiological contamination would be widespread and in many situations long-lasting and intense. It would cause substantial numbers of casualties. Serious radiation dosages could lessen the survivors' ability to work. The radiation hazard could also deny access to some areas for months for living or employment purposes and for many years for certain farming purposes.

Serious contamination could result from nuclear detonations elsewhere, from sabotage, or despite every precaution, from nuclear accidents in this country.



Types of radiological monitoring instruments which are standard equipment for radiological monitoring teams.

The National Plan for Civil Defense and Defense Mobilization emphasizes that Federal, State and local governments are responsible for nonmilitary radiological defense planning. However, industries and institutions are responsible for protecting personnel in their plants and facilities against radiological contamination and for assisting local government in developing the community radiological defense plan. All employees and their families are responsible for learning and conducting personal measures to minimize radiation effects and for supporting and assisting the community radiological defense program in case of enemy attack.

Weather Bureau and other reports of climatic and atmospheric conditions are now used to predict, for research and testing, probable areas of fallout using assumed data on detonation. These reports would also be used to make rough approximations of the radiological hazard resulting from attack, until actual information can be obtained through monitoring.

Radioactivity cannot be detected by the senses, but instruments can detect and measure it. These include dosimeters, which measure accumulated dose, and rate meters, in the form of (1) fixed-station monitoring devices for remote reading without exposure to the operator, (2) aerial survey instruments for general estimation of radiation levels over a wide area from aircraft, and (3) survey meters for use by trained monitors.

It is clear that the surface burst of a high yield thermonuclear device such as was tested at Bikini Atoll on March 1, 1954, would spread a probable lethal dose of radioactive fallout across an area of 7,000 miles. Plots of radioactive fallout drawn from this and other tests indicate that most of the United States would receive radioactive fallout in case of an enemy attack. The fallout problem, therefore, is continental in nature and can only be solved with a means of monitoring the vast regions of the United States together with some form of shelter that will provide radiation shielding.

Monitoring systems will be developed at all levels of government to detect and evaluate the hazards resulting from an attack. The National Radiological Defense Plan envisions a total of approximately 150,000 monitoring stations. Each station is to be manned by a minimum of four volunteers. Approximately 6,000 fixed monitoring stations will be established within existing federal agencies and manned by paid federal employees in connection with their routine day-to-day assignments. At least one fixed federal monitoring station will be established in each of the more than 3,000 counties. The fixed federal net of stations will have primary responsibility to report dose rate readings of radioactive fallout directly to OCDM Operational Headquarters, thereby permitting a rapid initial appraisal of fallout conditions on a national scale and facilitating immediate initiation of recovery operations at that level. They will use radio, teletype, and telephone for the two-way exchange of radiological intelligence and warning. State and local systems will provide detailed monitoring services for operational use.

Over 1,500 fixed federal monitoring stations are already in operation. They are located largely at field units of the Federal Aviation Agency, the Weather Bureau, the USAF Air Weather Service, and the Department of Agriculture.

It is very important that the radiological and meteorological intelligence, as well as nuclear detonation reports, be routed directly, on a top priority basis to the radiological defense officer at all levels of government. This prompt information will be needed for the preparation and issuance of survival guidance and warnings for the general public, and to provide technical guidance for emergency operations. Timely information of weapon effects is basic to the solution of the radiological defense problems of the nonmilitary defense of the Nation.

Types of stations which are being established for radiological defense include:

- A Secondary Monitoring Station is a fixed monitoring station which forwards its reports to one of the primary monitoring stations which has been designated as the collection center. In the larger cities, there usually will be about eight secondary stations per primary station. In the small communities there may be only two or three secondary stations, in which case they will report directly to the main primary station located at the control center.
- A Primary Monitoring Station has a monitoring responsibility but it also is responsible for collecting and forwarding reports from the secondary stations to the control center.
- A Main Primary Station serves as headquarters for the local radiological defense operations. This will be at the control center where such an installation exists.

The primary and secondary stations will be located at fire, police, welfare, health, road department and other government offices, including water purification plants and food distribution centers, utilizing existing personnel of these offices as monitors. Federal civilian installations at local level with monitoring capability will also serve as secondary stations for this network. Industries and private organizations will also be used as primary and secondary stations. However, they must become part of the organized State or local civil defense effort. While on station, the monitors serve as fixed station monitors; but while on emergency operations such as firefighting, policing, welfare service, road repairing, etc., the monitors serve at the site of operations.

In order to provide monitoring for State facilities and major transportation routes, a number of primary and secondary stations will also be needed in each State. These stations will be located at State and county police offices, highway repair and maintenance stations, health offices, etc. Monitors at these offices will provide fixed monitoring service while on station as well as mobile monitoring service along State and county roads and also make reports available to the locality in which they operate.

Monitoring stations are being established at the following levels:

Rural Areas—Rural monitoring stations are necessary also in the less densely populated areas of
the country, so that early action can be undertaken in order to protect the agrarian population
and the food production potential of the Nation.

These rural centers will be located at country school houses, Grange halls, post offices, individual farms or ranches and will be supplemented by State police, highway department, forestry service, agricultural stations, fish and wildlife stations and any federal stations located in the particular area. When the levels of radiation are

high the monitors at these locations will serve a fixed station monitoring function. As soon as the levels of radiation have decayed to tolerable limits, these monitors will be expected to perform a rather thorough mobile monitoring function. This will accomplish the monitoring of these rural areas as soon as possible after nuclear attack.

- Municipal Level for Radiological Defense—Usually the local control center, where the monitored data from local primary and secondary stations is plotted and analyzed. It may be a small urban area or a large metropolitan area.
- County Level for Radiological Defense—Usually at the county control center, where data from the municipalities is combined into a county analysis.
- 4. Sub-State Level for Radiological Defense—Usually at State-district level to collate data from counties and forward it to State level. The number of these may vary from zero to eight, depending on the size of the State. For example, California has four.
- State Level for Radiological Defense—At the State Control Center, where analyzed data from sub-State level is combined with monitored reports from State offices and from State aerial monitoring facilities. The resulting State analysis is relayed to OCDM Regional level.
- OCDM Regional Level for Radiological Defense
 —At the OCDM Regional Operations Headquarters, where analyzed data from State level is combined into a Regional analysis and forwarded to OCDM National Headquarters.
- OCDM National Level for Radiological Defense
 —At OCDM Operational Headquarters where
 analyzed data from Regional level is combined
 into a national analysis and forwarded to the
 OCDM National Classified Location.

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Warning of Radiological Fallout—At the present time fallout forecasts, as originated by the Weather Bureau, are transmitted in code to about 500 offices of the Federal Agencies over National Weather Teletype Service "C." From these offices the forecasts are made available upon request to civil defense offices. Several of the State civil defense offices further disseminate these forecasts to their communities over land line and radio state police and sheriffs' networks or over allocated civil defense amateur frequencies.

Warnings will be based upon actual monitoring in wartime and will indicate the severity and real extent of the fallout situation. They will also provide survival instructions and guidance to the people in the fallout areas. These would include instructions to remain in shelter or to move to better nearby shelter or possibly instructions to evacuate the area, giving specific directions regarding the evacuation route and time. Also, in some cases the warning might be simply to indicate the absence of serious fallout, advising the people that they can come out of shelter.

The National Plan for Radiological defense, therefore, provides a comprehensive and well-developed plan for (1) establishing a variety of stations for monitoring, detecting, and reporting fallout conditions, (2) a logical distribution of stations at various levels, and (3) a system of warning the public, including industrial and business firms, regarding fallout conditions.

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The need for prompt action and complete cooperation by industry in establishing radiological monitoring capability is further emphasized by the fact that the increased probability of employment of missiles for an attack indicates that rather than one massive saturated attack, it is likely that an attack may continue not only for a matter of several hours, but that it may extend over a period of days. If this is correct, assumption of complete reliance upon formulae for conversion of dose rates to a common hour is not feasible. Should an area receive fallout from the detonation of one weapon, and subsequently receive fallout from later detonations, there are two or more "H" hours. Standard radiation decay criteria no longer apply in a simple manner to doses or dose rates resulting from the mixed fallout. For this reason, procedures are based upon monitoring at common times throughout the nation. Reporting and plotting intensities for the preparation of fallout analyses will also be based on these common times rather than the presentation of dose rate contours as of H+1 which is common practice when it is assumed that all weapons would be detonated at approximately the same time. Continuous radiological intelligence, therefore, is vital to survival.

Industrial Participation in Radiological Defense—American industry must play a leading role in planning for community radiological defense and national survival. Fortunately, many companies are already organized and equipped to provide primary and secondary monitoring stations and facilities. Electronic manufacturers and others employing scientists and electronic engineers can establish monitoring teams and stations with a minimum of training since such personnel are already aware of the construction and use of radiation monitoring devices. Companies that do not have radiological defense capability can quickly acquire it by sending one or more employees to an OCDM Radiological Defense School to be trained as instructors.

Organization—Companies using atomic energy or isotopes are required to maintain trained medical personnel to work with the health physicist to prevent radiation injury and to treat radiation injury. In these instances, therefore, such technicians can serve as teams in primary and secondary monitoring stations and report fallout intensities to local government, as well as provide fallout information as a part of the plant self-help or civil defense organization.

The radiological monitoring service in an industrial plant may be established as a separate service or combined with certain other appropriate plant protective units such as the industrial medical service, industrial fire department or industrial police department. Special teams should be organized and trained and provided with appropriate detection equipment.

The functions of this unit are to detect the presence of radioactivity in the plant following attack and inform other services such as fire, police, medical, rescue, when it is safe for them to perform their duties; inform employees regarding the dangers of radioactive fallout; assist in providing guidance in preparing shelters to protect from fallout; maintain detection instruments including distribution of individual dosimeters as appropriate; train other plant protective services in radiological fallout hazards.

Each plant should have a minimum of four trained radiological monitors in order to qualify as a primary or secondary radiological defense station. The station should have continuous coverage, but as radiation levels diminish, monitors will serve also at the site of operations or as mobile monitors. Each radiological monitoring team will, therefore, have two basic functions, namely (1) to provide radiological fallout information at the plant or workplace as the basis for conducting survival operations and continuity of production, and (2) to serve as auxiliary to local government and as part of the local community radiological defense service.

Sources of Training and Information—The industrial radiological defense service has no counterpart in peacetime community organization or local government. However, technically qualified personnel are required for the operation and maintenance of radiological defense systems, equipment and facilities. Therefore, Federal, State and local governments have devised courses and training schools to train radiological defense instructors, monitors and radiological defense officers.

The Federal government provides instruction in radiological defense at OCDM Radiological Defense School at Battle Creek, Michigan; at the eight OCDM Regional Offices; at OCDM Training Centers at Manhattan Beach, New York, and Alameda, California; and throughout the country by travelling teams. Instruction is also provided through training programs sponsored and conducted by the Atomic Energy Commission and other Federal agencies and by State and local governments to which the Federal Government contributes technical advice and financial assistance.

All industries are encouraged to train certain personnel for radiological defense and to maintain a state of readiness by insuring continued application of their state of training and re-train where necessary.

When the instructor starts radiological monitoring classes in the plant, it is good to carry on training in such manner that employees will be aware of what is taking place. One company arranged to have the radiological monitoring teams in action during a change in work shifts, therefore, employees could observe what the teams were doing and ask questions. For example, the

team members were dressed in masks and clothing which is typical for monitoring teams. They would take their instruments and proceed to hunt for radioactive material which had been hidden in fence corners, near buildings and in open spots around the yard of the plant. Of course, employees were curious as to what was happening. Subsequently, the employee newspaper carried pictures and stories explaining what they had seen during the change of shifts were radiological monitoring teams composed of company employees who were going through their training exercises to monitor radioactivity from fallout in case of an attack.

Also, during the shift changes members of the fire department and radiological team would man fire hoses and wash off the buildings. Again, employees were curious and inquired as to what was taking place. The employee newspaper again carried stories pertaining to radioactivity from fallout and advised employees that the radiological monitoring teams and firemen were practicing decontamination procedures by washing fallout off the buildings.

Stunts such as these not only provide training for the radiological monitoring teams, but arouse interest as the basis for (1) advising employees that plans are being made for radiological defense at the workplace and (2) sets the stage for encouraging them to prepare their families and homes for radiological defense.

Companies using atomic energy often find it necessary to inform and educate employees regarding radioactivity in order to dispel fear of radiation at the workplace. Such employee information and education programs can easily be extended to provide education regarding the hazards of radioactive fallout, and management can urge employees to prepare themselves, their families and homes for civil defense. Many companies have distributed numerous civil defense publications pertaining to family fallout shelter construction, food and medical requirements, and other take-home information pertaining to civil defense.

Radiological Monitoring Equipment—Each radiological defense team or station should be provided with certain radiological detection equipment. Nuclear radiation from the fallout particles cannot be detected by the human senses. Therefore, for civil defense purposes, instruments for detecting and measuring nuclear radiation have been developed by the Office of Civil and Defense Mobilization. These instruments consist of:

A. A highly sensitive dose-rate survey instrument that can discriminate between beta and gamma radiation, for long-term cleanup and decontamination operations and for training programs, where low radiation dose rates will be encountered. (CD-V-700.)

- B. A medium-range gamma survey meter to meet the principal radiological monitoring requirements for civil defense operations following an attack. (CD-V-710.)
- C. A high-range survey meter to measure and discriminate between beta and gamma radiation in areas where high dose rates exist. (CD-V-720.)
- D. An extremely sensitive gamma radiation aerial survey instrument for rapidly surveying contaminated areas from aircraft. (CD-V-780.) (This is not a stock item—experimental.)
- E. A fixed-station monitoring instrument for group shelters, fire stations, and other structures, to provide occupants with measurements of outside radiation. (CD-V-711.) (Not a stock item being modified.)
- F. Dosimeters of three ranges that can be worn or carried by individuals to indicate total radiation exposure. (CD-V-138, CD-V-730, CD-V-742 replaces the CD-V-740.)

Radiation survey meters measure the rate of exposure, but do not show total accumulated dose. Dosimeters are used for this purpose. For civil defense operations, OCDM recommends the use of the self-indicating quartz-fiber electrostatic dosimeter, with a range of either 0 to 20 or 0 to 200 r. The lower range dosimeter is used when the expectation is that total exposure will be small, or that quite small repeated doses will be received over a long period of time. The higher range dosimeter is recommended for use where personnel could be accidentally exposed to large doses of radiation. It should be used when personnel are required to enter fields of high radiation, or remain in lower fields for long periods during postattack survival and recovery missions. Without such information for mission planning, workers might be asked to undertake duties involving radiation exposures that would be dangerous when added to previous unknown exposures.

CONCLUSION

It may be asked whether the steps which are being taken by Government and which have been proposed for industry can be taken with assurance that we will survive an attack. In all frankness, it must be admitted that after all foreseeable risks and problems are considered, there may be others that cannot be foreseen. But this much can be said with assurance: radiological defense preparedness must be accomplished throughout the nation, and American industry must make preparations to minimize the effects of attack should war occur, including preparations for detecting and reporting radiological fallout conditions. In RCA we are working toward this objective.

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Training the Plant Civil Defense Corps



By Arthur W. Harrigan, Jr.
Superintendent
Industrial Defense Planning
Western Electric Company
New York, New York

Mr. Harrigan has the responsibility for coordinating the Western Electric Company's industrial defense planning

activities. He joined the Bell System in 1946 as a purchasing analyst in the Western Electric Company's New York headquarters. He became supervisor of commodity statistics a year later and then participated in the company's Management Training School as a personnel assistant. After three years in Chicago at the Teletype Corporation, a Western Electric subsidiary, Mr. Harrigan returned to New York as Superintendent of Industrial Defense Planning for Western Electric, and has been in his present position since October 1, 1958. He has the degree of Ph.D., New York University, and is a member of the American Economic Association. He is a regular guest lecturer at the OCDM Staff College Course in Industry Defense and Mobilization and has lectured at many Industrial Survival Conferences which are conducted by State and local governments.

The stark reality of the nuclear threat has given a new sense of urgency to the development of plans for the protection of personnel and for the continuity of production and of management. Planning in each of these three major areas is essential to an effective industrial defense program. It is only natural, however, that priority should be given to the planning of personnel protection measures, for these are truly vital to industrial survival in the nuclear age. The focus of this article, therefore, is on the personnel protection phase of the Western Electric Company's defense program and more specifically on the training of the groups that are responsible for this protection—the plant civil defense corps.

There was a time when the worker's principal responsibility for self-protection was to do his work in a way that was safe for him and for his associates and to be able to move quickly out of the building in the event of a fire. Relatively few employees were called upon to supplement the medical, fire and other protective personnel that management or the municipality provided to assure the safety of people and of plant.

What was adequate for emergencies growing out of normal day-to-day productive activities, however, became hopelessly inadequate when Russia attained the capability of attacking the United States with nuclear weapons. At that time, the Western Electric Company, in common with others, realized that this new threat to our human resources gave a significant new dimension to the job of training employees in those activities which are so essential to survival. Our Program called for the expansion of existing protective forces; the creation of some new type protective forces; and the launching of a special and intense effort to train all employees in the special action required to minimize blast and radiation injuries.

In the first of these three areas—the expansion of existing plant protective forces—our major effort was to stimulate employees to take First-Aid training and to form these trained employees into teams which have designated areas of responsibility in the plant defense

organization. These teams supplement the "cot" or "stretcher" crews traditionally used to deal with the normal day-to-day emergencies that might arise in a large production organization.

We set out to train at least 10% of our employees in First Aid on the assumption that this would assure assistance from trained people even in the most dire emergencies. This objective has been generally attained and in some cases as many as 40% of the employees at a given location have taken such training. To us this has been a gratifying achievement because all of the training was given after hours on the employees' own time. The Company provided the First-Aid Instructor and in some cases a small first-aid kit for those who completed the course. These are not significant costs, however, when it is recognized that the worker who is trained in First Aid is the worker with a better safety record. There is no question, too, that it greatly improves employee relations because there are numerous cases where the trained first-aider has been of life-saving help to his family and to his fellow-man.

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First-Aid trained people have been formed into teams which are part of the defense organization. Several hours are devoted each year to practice exercises which serve to train the employees to work together as a team and at the same time refresh their knowledge of First-Aid techniques. These exercises are conducted during working hours.

The Fire Crew was another plant protection force that was expanded in the face of the nuclear threat. Where needed, fire auxiliaries were trained to supplement existing full-time and part-time crews. The holocaust that will follow a nuclear blast is much greater than anything ever before anticipated and it is, therefore, essential to have auxiliary fire fighting forces at many industrial locations.

The second major aspect of our personnel protection program was the creation of the new types of protective forces required by the nuclear threat—Rescue Squads and Radiological Monitoring Squads. Rescue Squads are new to all but a few industries, while Radiological



Rescue Squad conducting a training exercise at Western Electric. There are trained First-Aiders on the Rescue Squad.

Monitoring Squads represent a completely new industrial activity.

With the help of the Civil Defense people, we obtained expert training for a corps of our employees in the techniques necessary to extricate the injured from the debris of a building damaged by attack or natural disaster. These people went back to their locations and trained plant tradesmen, maintenance and other similarly skilled people who would be required to form the Rescue Squad for emergencies. Equipment was assembled for this training and other equipment used in normal maintenance work was designated for emergency use.

To make a start in the Radiological area, we brought together a small group of employees skilled in training techniques or with a technical background. These people studied the radiological problem and prepared a training manual for use throughout the Company. Several sets of instruments were purchased while others were borrowed from local civil defense units for this training. Because of the changes in the state of knowledge about radiological fallout, we are now embarking upon a program of retraining our monitors in new techniques for evaluating the degree of protection afforded by various types of buildings. For this purpose, we are purchasing additional instruments but still not enough for operational needs.

One of the problems in radiological monitoring is the expense of the instruments. Because of large Federal purchases, the price is down but few industries can afford the number of instruments they would require for

operation in a full-fledged emergency. We are, therefore, looking forward to the day when new instruments with \$5.00 and \$10.00 price tags that are talked about from time to time become a reality.

It is not enough to train monitors to counter the post-nuclear radiation threat. In addition, there is a need to make sure that management is familiar with the nature of the radiation hazard and aware of the practicability of doing something to counteract it and reduce its toll on human life.

The training of all employees in the special action that they must take to minimize blast and radiation injuries is the third and final component of our Personnel Protection Program. This category includes such things as warnings, Warden Organization, shelter drills, and shut-down procedures.

To make sure that we are promptly alerted to an attack, we provided a means for receiving the Civil Defense warnings at each location, usually through the Bell and Lights System furnished by the Operating Telephone Companies, and a system for disseminating that warning to our employees. The latter was achieved by utilizing existing signaling systems where practical and, as a result, a wide variety of plant warning devices are in use.

Our Warden Organization was built around our supervisory structure and made an integral part of our defense organization. Here also it was necessary to develop a training manual—one that fitted the needs of working groups that ranged in size from 13,000 employees at a large manufacturing complex to 6 employees at an installation site. The manual was used in a vertical conference type of training session to acquaint wardens with their responsibilities for (1) seeing that employees moved quickly to shelter areas; (2) checking to make sure that prescribed procedures for shutting down machines and processes were carried out; and,



Simulated shut-down procedure at Western Electric Company.

(3) taking other steps designed to minimize blast damage, such as opening windows.

Shelter drills are one of the more important means for training employees in the fundamentals of personnel protection. They serve to instruct the entire employee body in the meaning of attack warnings and to react to them without panic. They serve also to keep the members of the plant defense corps, such as the Wardens, alert to the effective discharge of their duties.

Drills are conducted quarterly. For the smaller locations, all employees proceed simultaneously to their shelter areas. The larger locations usually limit their drills to the employees in one or a group of buildings at a time. This makes it possible to keep the total elapsed time for the drill to less than 15 minutes.

While on the subject of shelter drills, a word about our shelters is in order. Specific areas in our plants have been designated as shelters. These have been well marked but no special features have been incorporated in them because we do not yet know what features will buy the most protection for the money. We do know, however, that no matter what is between the employee and the source of radiation, his exposure will be reduced. At certain critical levels of radiation, therefore, even a thin wall may make the difference between survival and a fatal exposure. Basements, of course, offer the best protection but where they are not available it is still possible to raise the rate of survival by sheltering people in less protected structures above ground. If you are in the blast zone, of course, not even the specially built shelters will provide adequate protection. The important thing to remember, however, and the thing which makes some protection better than none, is that vastly more people will be in areas outside the blast zone where fallout will be their greatest threat.

Shut-down procedures constitute the last item in the program for training employees in protective action. Detailed procedures have been established for shutting-down operations as promptly as practical and machine operators, maintenance personnel, wardens and others with processes under their control have been thoroughly trained in the action they should take when a warning is sounded. This training is provided during shelter drills except where the procedures are complicated. Where this is true, the exercise is conducted at separate times and some of the shut-down steps are simulated through tagging to avoid interruption of important processes.

One of the major problems in personnel protection training is to encourage the employees to recognize their responsibilities and to motivate them to participate in the training that is available. Through our shelter drills and through our rescue, radiological monitoring and other training programs, which are on-the-job activities, we have a means for maintaining employee interest. But to keep the large body of employees convinced of the need for their own self-protection, and to motivate them to undertake such things as first-aid training on their own time, requires a continuing effort to spell out the



Shelters are well marked at Western Electric Company.

nature of the threat and what can be done about it. The recurrent international crises have helped to maintain employee interest in industrial defense but one of the big problems ahead is to devise ways to offset the apathy that sets in when people begin to think, as some of them do today, that peace is here to stay. It is urgent to convince them that one of the best ways of increasing the chances for peace is to have an adequate non-military defense. This is truly an effective deterrent to nuclear attack.

The best way of making sure that each individual takes those non-military defense measures essential to his own and his family's protection is for his employer to demonstrate at the work place an awareness of the peril, an appreciation of what can be done about it, and a sincere interest in doing something about it.

At a recent conference on disaster medical care it was stressed that the most important defense job ahead of us is to prepare the American public for the time when it will be "survival of the knowingest, not the fittest." This should be the objective of all industry's Personnel Protection Programs.



Western Electric Shelter Drill.

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Testing the Plant Emergency Plan and Organization



By Michael Minnich
Director of Security
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Cleveland, Ohio

Mr. Minnich is a Charter Member of ASIS, currently serving a second term as Chairman of the Cleveland Chapter. He is a past Chairman of the Euclid Industrial Mutual Aid Association, a graduate of the Industrial Security Course, Army Intelligence School, and the Office of Civil and Defense Mobilization Staff College course in Industry Defense and Mobilization. He is also a member of Crime Clinic, Inc. in Cleveland, Ohio, a member of the Aerospace Industries Association Industrial Security Committee, and the National Institute for Disaster Mobilization.

It was quite a blaze. The fire broke out at 5:35 one morning in a room labeled "fireproof." Before it was over, \$90,000 in damage had been done. This was at our Tapco Plant in Euclid, Ohio, with over 10,000 employees.

The fire was in a locker room lined with metal cabinets. The entire room had to be rebuilt and refurnished with more than 2,000 new lockers. Personal clothing and equipment which had been destroyed in the old lockers were replaced by the company. There was considerable damage to the laundry crib inside the locker room. The fire had originated in the crib, probably from careless smoking. We rebuilt the room and added a new automatic water sprinkler system.

A \$90,000 fire is a mighty unpleasant and expensive way to test a plant fire control program. But it's effective.

We are convinced that the fire would have been much more damaging had it not been for the work of the civil defense and disaster control teams that morning. Once the fire was detected, about 100 trained members of the civil defense and fire control program quickly moved into action. In fact, their response was almost too enthusiastic. We don't want volunteer workers to be so eager that they endanger their lives. Yet the fast work of these volunteers did enable us to contain the fire within the one room. Without their work, it easily could have spread throughout the entire wing, if not the entire building. So—our civil defense efforts have actually paid off in peacetime—and paid us well.

There's good reason, however, why the fire brigade operated so efficiently. Fire control at Tapco is not a helter-skelter proposition. Plant protection personnel and all employees are prepared to meet plant emergencies through what is called the "Tapco Civil Defense Organization."

Tapco CD is organized in two phases. One is for fire control, the other for disaster control.

Some 200 volunteer workers participate in the civil defense activities. Training in this phase of the program includes wartime civil defense procedures. We have a fine civil defense unit in this group. Emphasis is on both domestic emergencies, such as explosion, flood, wind, rain, and fire damage, and on the hazards of war.

Program Includes Nine Groups—CD has been in operation at Tapco since 1951. Separate instruction is conducted for each of nine primary groups: first aid, rescue, fire brigade, auxiliary police, demolition, maintenance, communications, traffic control, and messengers. Training classes are limited to 25 workers in each group.

Between 25 and 35 members of each shift have qualified for fire brigade duties. They attend 18 hours of training, held twice weekly in one-hour sessions; and after completing this initial education, participate in monthly refresher courses of up to two hours' duration.

Training for the other eight phases of the program ranges from one hour for messengers to 30 hours for rescue teams. All groups receive refresher courses and participate in scheduled practice runs.

Included in the plant Civil Defense Organization, but under neither Plan 1 (fire control) nor Plan 2 (disaster control) are area firemen. About 60 employees on each shift are area firemen, charged with putting out minor fires within their own work areas. Should the fire appear serious, the fire control center is notified immediately either by messenger or telephone. At this point, Plan 1 goes into operation.

Eleven Tapco section chiefs have attended the former Federal Civil Defense Rescue School at Olney, Maryland. These people have studied all phases of rescue work, and use their knowledge to instruct fellow workers in the techniques of civil defense.

More Than Drills Involved—To maintain the efficiency of the program, periodic drills are held for the volunteers. Members of the civil defense teams, identified by civil defense helmets, special armbands, and badges, parade through the plant during regular working hours. The parade produces a tremendous boost in employee response, both among the participants and non-participants in the program.

But the Tapco program is more than classroom training, monthly drills, and interest-arousing parades. The

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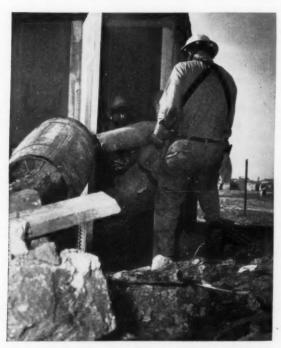
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Civil Defense Organization is truly organized—and it truly works. Here's how:

When an emergency develops, civil defense teams are notified by means of signals on the plant fire whistle. A coded blast identifies the location of a fire (under Plan 1), or a continuous grouping of short bursts warns of a more extreme emergency (Plan 2).

Under Plan 1, the fire brigade moves directly to the fire, to be met and directed by a fire lieutenant and a regularly assigned company fireman. At the same time, radio-equipped lift trucks and motorized personnel carriers are dispatched to a designated emergency station within the plant. One or more of the radio-equipped vehicles also will go to the scene of the fire, thus allowing three-way communication among the fire brigade, the emergency station, and the control center.

Nerve Center of Plan 1—The latter is the nerve center, run by the plant protection chief and by trained management personnel. It is their responsibility to formulate plans to cope with the fire or disaster. Through the radio equipment, the control center can communicate with volunteer workers at the emergency area, in order to direct over-all strategy.



In a simulated disaster, trained rescue teams rescue a fellow employee "trapped" under fallen debris and rubble at the Tapco Plant, Thompson Ramo Wooldridge, Incorporated, Cleveland, Ohio.

Two other groups normally help the fire brigade when Plan 1 operates. These are maintenance personnel and traffic squads. The maintenance men report to the emergency station, equipped with ladders, torches, and other equipment needed to cope with any maintenance problem. Traffic squads direct vehicles and individuals to



The Industrial Medical Services and emergency First-Aid teams participate regularly in test exercises at the Thompson Products Division, Thompson Ramo Wooldridge, Cleveland, Ohio.

safe locations while they keep lanes open for fire-fighting equipment and fire brigade members. Workers associated with Plan 1 wear red identification badges to distinguish them from regular employees, who wear green badges.

In addition to the volunteer groups of fire brigade men, maintenance men, and traffic squads, all available plant protection men and a dispensary nurse join the efforts to whip the emergency.

When the signal sounds for Plan 2 (disaster control), auxiliary policemen immediately report to plant entrances, replacing regular members of the plant protection unit. Guards displaced take assigned positions at various points within the plant to safeguard vital or sensitive spots.

Emergency Squads—Emergency squads, skilled in maintenance, demolition, first aid, rescue, fire brigade, radio communications, and traffic control, report to their emergency station. Depending on their function, members of these units wear either red or yellow badges, again to distinguish them from other employees.

Radio communication is established with the control center to provide specific assignments for the various disaster crews. Tapco has even taken the added precaution of organizing teams of messengers, to be used in case of telephone and radio communication failure.

Plan 1 was put to test in the locker room fire in 1955 and, as expected, the volunteers met the test like veterans. On the basis of periodic test runs, the training officers feel that the employees would work just as effectively in case Plan 2 had to be put in operation.

I have found—like many others in the industrial security and safety fields—that fire and disaster control programs can be efficient only when the one in charge has the cooperation both of the workers under him and management over him.

Management Gives Support—Speaking of management's support, in the protection of life and property, Thompson management has long felt the need for workers

trained to cope with emergencies arising from everyday operations. Such a program provides a nucleus on which to build defenses against sabotage or enemy air action. All employees are proud of their fellow Tapco workers who have volunteered their services to protect their lives in case of emergency.

The program has its problems, as any would. Reassignments of trained volunteers, changes in manufacturing operations, and production readjustments sometimes cause an overloading of volunteers in one area or shift, leaving a corresponding group understaffed. Constant vigil over personnel changes, and continued training of additional CD workers, are absolute requirements of an effective emergency program.

Fire and disaster loss records are charted and analyzed thoroughly at Tapco. Included is information on the actual dollar loss, the amount of time and number of men involved in combating the emergency, and the type and amount of equipment used. Prepared in graph form, this information helps to test the record of the CD program, and often provides clues for new or better methods of emergency control.

Euclid Industrial Mutual Aid Association—Should an emergency arise, we are prepared to take immediate action. However, we realized like almost any other plant, we are not stockpiled to cope with any eventuality. To this end, we thought of Mutual Aid—a plan where an affected plant could receive assistance in trained manpower and/or equipment from neighboring plants not affected. A few years back I contacted a number of plants in our Cleveland suburb and found that there was interest in establishing a Mutual Aid program.

With the approval and cooperation from the Mayor, we began holding meetings in the Euclid, Ohio, City Hall. We prepared Operating Procedures—a workable plan with no binding commitments. To summon Mutual Aid we set up the Euclid Police Department as the Control Center. Inventories from participating companies have been cataloged and are on file at the Euclid Police Department. We have also furnished a copy of these inventories to the Euclid Fire Department. The Euclid Industrial Mutual Aid Association is now in its second year with some 15 companies participating. We have tested our program on paper and are planning further tests by actual movement of emergency trained manpower and equipment.

We hope we never need Mutual Aid but it is a good feeling in the community to know that a plan is ready to go into effect which could save lives and minimize damage in almost any eventuality.

I am convinced that every plant of 100 or more employees could and should set up a civil defense and disaster control program similar to ours at Tapco. However, it is imperative that once the emergency plan and the emergency organization have been developed that they be regularly tested.

Almost every major industrial accident, fire, explosion, or damage by flood, tornado, hurricane, or other

natural disaster is followed by a meeting of the safety and emergency planners to analyze the possible causes and plan for methods of preventing damage from such causes in the future. This is a normal procedure in disaster control and emergency planning activities. It is an appropriate time to discover the bugs in the emergency plan and organization. But the best time for a test is before, not after, a disaster. It is unfortunate that too often the bugs were not discovered sooner and adjustments made in the emergency plan which would have prevented the cause of damage or at least have resulted in lessening the damage—don't wait for a "fire-proof building" to burn to test your emergency plan.

One of the best times to test the plant emergency plan and organization is during the Annual National Civil Defense Exercise—Operation Alert. This National exercise offers American industries the opportunity to test and rehearse their disaster and emergency plans in cooperation with the community civil defense plan and in coordination and cooperation with local government. It is the time to demonstrate the fruits of months of civil defense and emergency planning, training and preparedness and to check up on the adequacy of the plant industry defense and survival plans.

The Standards for "Operation Alert 1960" stated that "Industry, private organizations, and the public are encouraged to take such emergency actions as are consistent with their emergency plans and the emergency plans and exercise objectives of the State and local governments in whose jurisdictions they are located."

In many ways the emergency procedures within an industrial plant are as comprehensive as the civil defense tests for an entire community. In fact, the plant emergency plans should be linked directly to the community operational plan.

The Plant Civil Defense Coordinator is to the industrial plant what the Civil Defense Director is to the community. He is responsible for planning, organizing, and preparing for the survival of his company, its plants, and employees. It is especially important, therefore, that disaster control activities within industrial plants be developed in cooperation with local government departments and civil defense officials.

The steps taken by the local civil defense director to plan for the survival of the entire community are similar to the steps which must be taken by the plant civil defense coordinator to plan for the survival of his plant and his company.

In every National "Operation Alert" many companies have conducted full-scale exercises within their buildings and plants in cooperation with neighboring plants and with local government. Such exercises not only test the plant civil defense plan, but result in greater teamwork and cooperation in the entire community.

The Industry Office in the Office of Civil and Defense Mobilization has repeatedly encouraged industrial emergency and civil defense planners to participate in local civil defense exercises during the Annual Operation Alert. Here are some of the typical activities and exercises which have been suggested:

- Make arrangements for the alert warning to be received at the plant. In some instances this may be accomplished by special direct alerting systems; however, most plants will receive the warning by the community outdoor warning system.
- Relay the alert warning to employees. The usual emergency warning is generally adequate; however, some plants have developed special recordings and public address systems for this purpose.
- Man and activate the plant emergency control center. The plant control center is the hub of the plant civil defense system and can easily be humming with activity.
- 4. Test the communications system. Periodic reports can be received from all departments on their progress in meeting the emergency. New information can be transmitted to the emergency service groups, all such information can be correlated, and reports can be made to the community civil defense control center.
- 5. Put the plant civil defense and disaster control organization into action to save life and property. This is an opportunity to practice a full schedule of activities in saving lives of employees and protecting plant property by the self-help teams. Of course, all such activities should be developed in cooperation with the local civil defense officials and the plant emergency-trained teams should be enrolled as auxiliaries to the appropriate departments of local government.
- 6. Simulate a plant shutdown. Trained personnel in each department of the plant should be required to carry out a simulated plant shutdown procedure by going through the motions of pulling switches and closing valves. Many companies have conducted mock shutdowns by having employees put white tags on each piece of equipment noting the time when the equipment was turned off.
- If local government orders "take cover," have employees go to shelter areas.
- 8. If evacuation is ordered by local government, have such employees as can be spared leave the plant in a token evacuation. Several companies have engaged in evacuation exercises by having employees actually leave the plant property and follow evacuation routes to the previously designated reception centers.
- 9. Industrial radiological defense teams should practice radiological monitoring and reporting fallout hazards to local government. Radiological defense teams dressed in appropriate clothing and using proper detection instruments can do much to dramatize to employees the importance of radiological defense. Some companies

- conduct exercises regularly for all employees to see by having the radiological teams hunt for radioactive material which has been hidden on the plant property.
- Arrange where possible to receive reports from local civil defense authorities, and plot potential fallout patterns in and near the community.
- Simulate radiological decontamination procedures. Some companies have washed off buildings with fire hose as a means of dramatizing to employees the importance of proper fallout decontamination.
- 12. Conduct fire drills and firefighting exercises.
- Conduct rescue drills and simulate the rescue of employees "trapped" under fallen rubble or from upper stories of buildings.
- 14. Plan for mock injuries to employees and arrange for industrial medical groups and first aid teams to rush to the aid of "injured victims." Such victims can be rushed to the emergency hospital or first aid station in a token ambulance run.
- 15. Arrange for plant police to check for "sabotage and espionage," direct traffic, and report "unexploded ordnance."
- 16. Have emergency repair and restoration teams make simulated repairs to essential utilities. Such teams can make simulated emergency repairs to power and communications facilities, provide emergency water resources and team up with local power and communications companies to assist in restoring these services to the community.
- 17. If your plant is a member of an Industrial Mutual Aid Association for Civil Defense, this is the time to test industrial mutual aid measures by practicing life and property saving activities under simulated attack conditions.
- Again, management should urge employees to prepare themselves, their homes and their families for civil defense and distribute publications on home preparedness.
- 19. Activate the alternate company headquarters or "remote emergency location" and work at solving appropriate postattack problems such as:
 - (a) Assessing damage to the company plants and losses of personnel and reporting such data to local authorities.
 - (b) Testing communications with company plants in other areas and with local government.
 - (c) Arranging for continuity of management by temporarily filling vacancies due to loss of directors or other key personnel.
 - (d) Simulating the use of duplicate records stored at safe locations or at the company emergency headquarters.
 - (e) Restoring company operations.
 - (f) Moving emergency stockpiles or equipment, raw materials and finished products

THE PROBLEM: Development of a new, highly reliable rocket propulsion system

IN FINDING A SOLUTION:

2 HEADS ARE BETTER THAN 1

BUT ARE ...

4 BETTER THAN 2? 8 BETTER THAN 4? 16 BETTER THAN 8? 32 BETTER THAN 16? 64 BETTER THAN 32? 28 BETTER THAN 64?

At United Technology Corporation, the old adage—"two heads are better than one"—is viewed with respect.

But it also is recognized that at some point, too many can cause excessive administrative detail, confusion, and red tape which increases the difficulty of finding the solution to the original technical problem.

The emphasis—corporate philosophy—at United Technology Corporation, therefore, is on quality—capacity of mind, talent and experience, rather than on sheer numbers of people. This approach permits the maximum per-centage of scientific and engineering man-hours to be devoted to the analyses and experimentation required to obtain the best answers to the technical prob-



UNITED TECHNOLOGY CORPORATION

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- as directed by appropriate agencies of gov-
- (g) Simulating use of substitute raw materials and equipment for production.
- 20. Conduct appropriate publicity and promotional activities for civil defense such as:
 - (a) Using appropriate emergency and disaster posters throughout the plant on bulletin
 - (b) Making distribution of civil defense and home preparedness pamphlets to employees.
 - (c) Setting up special displays in lobbies, cafeterias and other departments.
 - (d) Publishing civil defense articles in the company newspaper.
 - (e) Discussing civil defense at employee meet-

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- (f) Telling the public about the company civil defense plan and emphasizing that the company is cooperating in the home town civil defense program. Also, short civil defense messages can be carried in company publications and magazine advertising, short civil defense announcements can be included in the company radio programs and movie scenes can be made available to local TV stations showing the plant participation in civil defense exercises.
- (g) Placing civil defense signs on all trucks and other vehicles denoting their use in the plant evacuation or other civil defense exercise.
- (h) Making movies of the exercises which can be shown to employees and to other groups in the community as a means of informing them regarding the over-all company plans for civil defense and enlisting their cooperation, support and assistance.

No better opportunity can be found for annually testing the plant emergency plan and organization than the National "Operation Alert" Exercise. Not only is this a chance to rehearse all procedures which have been planned for emergency civil defense operation, but it is an excellent opportunity to join hands with the various departments of local government in testing the community survival plan.

Undoubtedly, many bugs will be found in putting the plant civil defense plan into test action, but the important thing is to find these "bugs" before a real emergency and appropriately revise and improve the plant emergency plan and emergency organization. A "test" by a real emergency could be costly-even put you out of business.

Hazards Magazine July, 1956.

NOTE: Portions of this information appeared in Occupational

INDUSTRIAL SECURITY, JULY, 1960

Telling Employees About the Company Emergency Plan



By P. Raymond Nielson Coordinator, Disaster Control Mutual of Omaha-United of Omaha Omaha, Nebraska

Mr. Nielson has been with Mutual of Omaha for over four years. He is a member of the Omaha-Douglas County (Nebraska) Civil Defense Organization, and has participated and assisted in the OCDM Staff College Course in Industry Defense and Mobilization. In conjunction with Nick Erkman he developed the United of Omaha's Disaster Control Program.

The most highly organized and fully implemented disaster plan is destined to failure unless the people it is designed for, understand it and take an interest in it. Any effective disaster plan depends on a certain number of persons to make it function. There are many jobs that have to be done, ranging all the way from the initial planning of the program to the following of wardens' instructions when moving to a shelter area. In order for each person to do his job correctly and without hesitation, it is essential that all concerned recognize the importance of the program, understand his individual role in the over-all plan, and actively support the program. There are few things more detrimental to an effective organization than constant undercutting by a few disinterested members.

Those of us working in the field of Civil Defense and Disaster Control soon find that one of the biggest problems we have to overcome is APATHY. The American people are usually reluctant to think seriously about the possibility of armed conflict in their own back yards. They are even less concerned about the need for developing any form of emergency plan should such a thing occur. Even admitting that a need for such a plan does exist, they tend to let the "other fellow" do something about it. Once we recognize this apathy, we can launch our campaign to overcome it. All companies have something to sell whether it be a service, electronic computers, or lead pencils. To stay in business you must develop a demand for it. This same principle holds true in successful disaster planning; you must create a demand for it.

Most advertisers will agree that the best way to

create this demand is to demonstrate the NEED for the product. Make the customer DEMAND your product to fulfill his need.

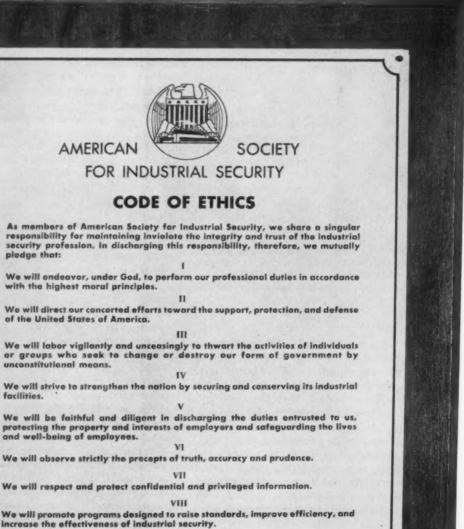
The individual's readiness to recognize the need for disaster preparedness varies somewhat with the type of work he does, the industry in which he is engaged, and his geographic location. People living in "Tornado Alley" are quick to recognize the dangers they face every spring. Gulf Coast and Atlantic Seaboard residents are acutely aware of the hurricane threat. Workers in industrial and defense complexes can be made to realize the susceptibility of their plants to enemy attack in the event of international war. The important thing, then, is to play up the primary threat to your operation, while pointing out the value of a good emergency plan should you fall victim to any type of disaster.

Whatever methods are used for informing our coworkers about the emergency plans, it is important that the presentation be in a serious manner. All too frequently, Civil Defense conveys the impression of an old man with sand bucket and flashlight in hand roaming the streets worrying about the effectiveness of your blackout curtains; therefore, in talking about the emergency plans, emphasize the practical and realistic aspects. Point up the value of first-aid training, fire protection and blood typing in day-to-day living. Make disaster control a desirable and easy to live with part of the normal routine.

The selection of the proper media requires careful planning. The best written prose in the world is of little value if it is not read and digested. There are many different methods available to tell employees, and others, about the company's emergency plans. Naturally, some will adapt themselves more readily to a particular plan than will others, but all are methods that have been used successfully for decades by businessmen intent on selling their products. Select the lines of communication which seem to be the most sought after by the group you wish to reach. A company's advertising and public relations experts may be of considerable help in preparing effective copy and in selecting the best media.

In your search for the proper media the first step should be a complete appraisal of the company's established information pipelines. Study these sources of information since everybody is already familiar with them and naturally turn to them for news on company happenings. Most of us like to do things the easy way and our "audience" is going to find it easier to learn about the emergency plans if the information comes from an old familiar source.

(Continued on page 78)



The above is a photographic reproduction of the Society's Code of Ethics. This is black lettering on anodized gold aluminum mounted on beautifully polished mahogany and is suitable for hanging in an office. The central office has a few of these left, and they may be purchased by members for \$4.00 each postpaid.

We will work together toward the achievement of the professional objectives

of the Society.

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- II. Background Investigations
- III. Thefts-Internal
- IV. Protection of Proprietary Information
- V. Why Emergency or Disaster Planning
- VI. Fundamentals of Emergency and Disaster Planning
- VII. Preparing for Handling Classified Contracts
- VIII. Department of Defense (Program to be prepared by DOD)
- IX. Security Problems in Retail Business
 - A. Shoplifting
 - B. Fraudulent Checks
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Telling Employees About Plan

(Continued from page 75)

The number one item on this list may be the employee magazine which is normally read by all and is usually considered to be a reliable report of the recent activities of the company and its employees. Many organizations regularly use this publication for announcing changes in company policy, new employee benefits, and future plans. The January, 1960, issue of Industrial Security carried the reprint of an article from Mutual of Omaha-United of Omaha's employee magazine Criss-Cross Currents. "An Ounce of Prevention . . ." shows how one disaster plan was successfully announced to the employees. The little "tearout" listing basic emergency instructions and the names of all floor wardens and their assistants was very well received.

If yours is a manufacturing concern, you undoubtedly have an established safety committee. In fact, the members of this committee have probably played a big part in the development of the emergency plan. Announcements such as bulletins and safety posters are "old hat" to this group and are naturals for giving tips on disaster preparedness. Make use of this medium a standard procedure.

Daily newsletters, bulletins, bulletin board postings, sales magazines and any other regular publication should be closely evaluated as a possible channel for the dissemination of disaster information. In looking at these items, check carefully the normal make-up of the reader complex. To be effective, the medium must carry the proper message to its specific group of readers; for example, information appearing in bulletins that are normally directed to management will be prepared differently from that contained in a general employee announcement.

Because of their regular duties, supervisory personnel are considered spokesmen for company policy and employees naturally turn to these individuals for information. It is vital that all executives, supervisors, managers, foremen, and sectionheads be thoroughly acquainted with the emergency plan and give it their full support.

Routinely, almost every company holds meetings and seminars for its supervisory staff. The director or coordinator of your emergency plan should be given the opportunity to talk with these groups during one of their regular sessions, explaining and selling the disaster program to them. It is usually best to work with and gain the support of these people before any attempt is made at general employee education. Provide the "bosses" with pamphlets and schedules so that they will be prepared to answer the questions of their people when the grapevine starts to function.

It should be pointed out to these folks that it will be an advantage to everyone concerned if they will hold regular meetings with their people to discuss the plan. Supervisors and foremen should be prepared to provide general instructions as to what to do in an emergency and should be sure that everyone in their charge is acquainted with the location of and the route to their shelter area and/or disaster station. Nearby first-aid stations should be opened for examination (at least to the trained first-aid group) so that they will be somewhat familiar with the equipment available in case of an emergency.

Whether or not they have a regular assignment in the emergency plan, the supervisory personnel will play a key role in its successful operation.

New employees should be made aware of the existence of the disaster plan early in their career with the company. The sooner the individual is acquainted with the program the more important it becomes to him, and the more apt he is to take an active interest in it. Since a disaster can strike anytime, it is necessary that a new employee know what is expected of him in an emergency.

During employment interviews, the interviewer should mention the program and while evaluating the prospective employee's past training and education, make an effort to determine how he might best fit into the program. Many recently discharged servicemen have had basic training in firefighting, rescue work, first-aid, and chemical, biological and radiological warfare. Experience such as this is a welcome adjunct to any disaster plan and should not be ignored. Early involvement in the program not only implements the emergency plan but also gives the new employee a real sense of belonging and makes his adjustment to a new company much smoother.

Shortly after assignment to his regular job, his immediate supervisor will have explained the emergency plan to the new employee. The area warden should also be introduced to him so that he can recognize immediately the person who will be giving directions during an emergency. After these initial steps have been taken, his disaster *training* may be started. This may simply be a thorough indoctrination in all the details of the disaster plan or, because of his experience and aptitudes, he may be given intensive instruction in first-aid, radiological monitoring or rescue work.

As each phase of his training is completed, the personnel department should be advised. From this source, a roster of disaster workers can be kept, enabling the plan coordinator or director to determine quickly the current manpower situation and make his plans accordingly. In addition, this provides the personnel department with an insight into the employee's interest in the company and in his fellow workers—factors that are normally evaluated when he is in line for promotion.

After plans have been made to utilize existing lines of communication, take a look at the opportunities created by the establishment of the program itself. It may be worthwhile to consider the preparation of a special emergency plan newsletter. This would be

(Continued on page 145)

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... and up to 480 telephones can be reached simultaneously with a group-alert message!

Now—from Bell System research—comes a new communications development with unique application in the fields of Civil Defense, public safety, fire fighting, military operations and industry.

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Informing and Educating Employees in Home Protection



By R. L. Wheland Industrial Defense Coordinator Jones & Laughlin Steel Corporation Pittsburgh, Pennsylvania

Mr. Wheland is an active civic and community leader. He has served on numerous advisory committees and as

consultant in the field of Industry Defense. Prior to joining Jones & Laughlin Steel Corporation in 1953 as a Staff Industrial Engineer, Mr. Wheland was Personnel Manager for the Joy Manufacturing Company's New Philadelphia, Ohio, plant. Other positions he held with Joy Manufacturing included: Superintendent of machine shops; Supervisor of the Standards Department; Supervisor, Cost Accounting Department, and Assistant Chief Accountant. He is a past president of the Pittsburgh Chapter of the National Association of Suggestion Systems, and the Pittsburgh Chapter of Gideons International. He is a Director of the National Institute for Disaster Mobiliziation, Inc. He is a guest lecturer at the OCDM Staff College Course in Industry Defense and Mobilization, and at numerous Industry Defense and Survival Conferences throughout the Nation.

When we stop to consider the facts surrounding the problems of planning for a disaster, we realize that our plans must be based on the concept of survival—survival in the face of a devastating thermonuclear attack on this country.

Such a concept is massive and terrifying to the human mind. When we read of the possibility of having bombs dropped upon our cities with a five-mile wide fire-ball as hot as the sun, 400 mile clouds of radiation, and artificial winds of thousand of miles an hour, we realize that survival is only possible through the efforts of careful planning now.

The possibilities of the potential threats present a frightening picture and many people could be hypnotized into complete inaction by simply dwelling on it. In fact, many people are of the opinion that countermeasures are impossible and, therefore, they do nothing.

Those of us in industry, who have worked with the problems of survival that may arise during a nuclear war, know about some things that are possible for survival and our planning should be based upon this positive thinking.

Many individuals are completely indifferent on this matter of survival and take the attitude that they just don't care; however, when the time comes to take cover in an actual alert, these individuals will be running for cover along with those who admit they do care. If we are to be realistic in our thinking, we will agree that everything that possesses life will fight to preserve that life under any circumstances. For example, most of us know how an animal or an insect will make an attempt to flee when they sense their lives to be in danger. We humans had to improvise such instruments as the mouse trap and the fly swatter to outsmart the intelligence of these pests in order to take their lives. Another

example is a plant that has been placed in total darkness with the exception of one small beam of light. The plant will grow completely out of proportion to reach the light which is so essential for its survival.

History has proven that humans are no exception to this concept of a desire within to fight for life. The frozen men at Valley Forge, the starved and beaten soldiers at Corregidor, the tortured masses in Nazi concentration camps—they never gave up the fight to survive. Men have been buried alive in caves, covered by mountain avalanches, and left to die in medieval dungeons—and a great many fought to live, and lived to tell about it. If our country should become involved in another war, man will again confirm the facts of history, by proving his desire to survive. However, his desire to survive in the next war may not be sufficient if he has not provided the necessary essentials for survival.

The Industrial Defense Advisory Committee of the Jones & Laughlin Steel Corporation believes that one of the most important phases of planning for a disaster lies in an educational survival program for each individual Jones & Laughlin employee and his family. An educational program that will advise the employees and their families of the potential dangers from thermonuclear warfare, chemical warfare, or biological warfare and the simple steps that can be taken to help insure survival. Such a program is more than a valuable service to employees. It should help to protect the lives of individuals representing many years of experience, training, and service—men and women who have contributed to the success of the Corporation and who will be needed so badly during a post-disaster period.

The problem has been to develop an effective means of conveying survival information to more than 40,000 employees living throughout the United States and Can "do then cour ingly

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Canada. Many of these employees probably have the "do not care" attitude and it is difficult to impress upon them that survival is possible during an attack upon this country and that they should make their plans accordingly.

The Committee has concluded that the best way an educational program can be effective for all the employees and their familities is through the distribution of printed information. In view of this decision, it was agreed that a special 9½" x 12½" envelope be prepared and that important information be placed in the envelope before distributing. On the face of the envelope is printed in red ink, "Air Raid Instructions" and what to do when the "Alert" and "Take Cover" signals are sounded. At the bottom of the face of the envelope are two sentences, one reads: "Take this envelope home and keep it where you can get it easily in the event of a disaster." The other reads: "File All Civil Defense literature and information you receive in this envelope."

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Additional survival information will be distributed to the employees to be put in the envelope at various intervals. Our feeling is that employees may delay reading the material if the envelopes contain too much literature at the time of distribution. So that no valuable



John E. Walsh, a river pump operator at Jones and Laughlin's Pittsburgh Works, discusses the contents of his industrial defense envelope with his wife, Lorraine, and his two children, Delores and Jackie. The special envelopes were distributed to John and more than 42,000 other employees.

information will be overlooked, additional literature will be distributed approximately every three or four months. This will keep the program active among the employees. It will also provide an opporunity of distributing up-to-date information, thus keeping the employee advised of the most recent developments and precautionary measures necessary for survival.

The envelopes as well as the supplemental materials are distributed by the departmental supervisors and in most instances, this is done during a safety meeting. At the time of distribution, the supervisors impress upon the employees the importance of the information on

the face of the envelope as well as the material inside. The employes are requested to discuss the information with their families and to pass as much as possible on to their neighbors.

A covering letter in the envelope points out to the employee that there are warnings on the great danger associated with radioactive water supply in the event of a nuclear war. The employee is urged that one of the very first things to do in the event of an attack is to shut off the supply of water into the home. Each home has an average of forty gallons of water stored in various containers and this move will prevent possible contamination of such water by an inflow containing radioactive impurities. This will give the employee and his family a supply of uncontaminated water in addition to whatever he has stored in preparation for such an emergency.

Each envelope contains the following Civil Defense Information:

- "Facts About Fallout Protection"—This booklet explains what "Fallout" and "Radioactivity" are and the various ways a person can be protected from the harmful effects.
- "Between You and Disaster" is a two page folder that lists the items that should be stored such as an emergency food and water supply. Many other essential supplies are also listed.
- "Civil Defense Technical Bulletin" (TB-5-3) gives considerable technical information on family shelters for protection against radioactive fallout. Data on shielding, ventilating, and sanitation are included in the bulletin.
- 4. "First Aid." This little booklet lists six emergency actions to save lives until medical aid arrives. Introductions on treating patients for bleeding, burns, broken bones, shock and suffocation are outlined as well as different methods of artificial respiration. A list of emergency medical supplies and the purpose for which they are to be used is included in the booklet.
- "When the Warnings Sound" is a small card that can be carried in a billfold and outlines the action that should be taken when the "Alert" and "Take Cover" signals sound.
- 6. "Handbooks for Emergencies." This booklet covers the steps that should be taken during disasters such as fire, flood, hurricane, or tornado as well as those precautionary measures to be taken in preparation for a man-caused disaster.
- "Your Government and You" is a two-page folder that explains what Civil Defense is and why we need it. The responsibilities of Government, every citizen, and women's organizations are explained.

No matter what sort of a nuclear attack an enemy might launch against any city of our nation, the individuals who survive from the initial bomb blast will need protection. Even the lightest assault would almost



Jack Woodell, a foreman of the Line and Wire Department of Jones and Laughlin's Pittsburgh Works, explains to a group of employees the importance of the Special Industrial Defense Envelope and its contents that were distributed to all employees of the corporation.

certainly produce a lethal "rain" of fallout within a matter of minutes.

Radiation from fallout presents a massive threat to target and non-target areas alike. There are very few places in our nation that are sufficiently isolated from the threat posed by fallout. The vagaries of wind and weather bearing their deadly cargo of fallout, could bring the fatal rays of radiation into every home, factory, school and office.

Fortunately, satisfactory protection from fallout can be obtained by relatively simple means. The tremendous number of casualties resulting from radioactive fallout can be avoided through education.

In view of this threat, the Jones & Laughlin Steel Corporation impresses upon the employees that the first step to be taken in a home survival program is to have a "plan" and this first and important step need not cost the employee one cent. The first step of the employee should be to sit down with all the members of his family and work out a "plan" so when the sirens sound the warning of an actual alert, every member of the family will know exactly what to do. The "plan" should include a predetermined location in the home that will offer the best protection from all the hazards anticipated. The family should know that the basement is a much safer place to be than on the first or second floor of a home; however, there should be a means of escape in the event of fire.

Further development of the "plan" should be governed by the head of the household and his financial means. Consideration should be given to the stocking of food, water, medical and first aid supplies, battery radio and the other suggestions found in the literature distributed. Special consideration should be given to the adding of extra reinforcement and shielding material to the shelter area.

The employee educational program as outlined above

is only a part of the Jones & Laughlin Steel Corporation's Industrial Defense Planning. Other phases include:

- A Records Retention Program which provides an underground vault that is designed to protect the vital records of the Corporation during an emergency. The program specifies which vital and important records are to be microfilmed or duplicated and stored in the vault and the length of time they should be retained.
- 2. Plans have been formulated for establishing an Emergency Headquarters for the General Office Organization in the event the present facilities should become inoperative. A Manual has been prepared which outlines the details of this phase of the Industrial Defense Planning. The Plan provides for nine Emergency Reporting Centers outside of the city limits where the employees who survive a disaster may report for service.
- Industrial Defense Training for Instructors has been given careful consideration and a Manual has been prepared on this subject.
- 4. In the steel plants, where continuous production is a major factor, we have concentrated on phases of first aid such as artificial respiration, control of bleeding, transportation of the injured, burns, bandaging and splinting. In some steel mill departments, all of the employees have received this training.
- 5. Jones & Laughlin have stressed the importance of regular inspection of fire protection equipment. Regular inspections of the equipment are made to make certain it will function properly when needed. Fire protection training in Industrial Defense is centered around the nucleus of departmental fire brigades. Brigades vary in size depending on the equipment located in the area involved.
- A "Good Housekeeping" standards program, wherein monthly inspections are made, has helped the current safety position and has decreased the potential fire hazard.
- Shutdown procedures have been developed in written form so that each plant is fully aware of the time and procedure involved in shutting down each unit.

The Jones & Laughlin Steel Corporation's Industrial Defense program has been planned for the purpose of having an organized plan whereby the employees of the Corporation as private citizens and as employees would know what to do for the greatest assurance of survival of themselves, their families, and the Corporation's records and equipment in the event disaster strikes. Encouraging progress has been made; however, much more must be done. Due to recent developments in the missile program and the increase in the potential dangers, many changes are being contemplated.

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By Clarence F. Petzinger
Assistant to Vice President of
Manufacturing and Engineering
The Cleveland Twist Drill Company
Cleveland, Ohio

Mr. Petzinger has been with the Cleveland Twist Drill Company for 32 years. He was the firm's Production Manager and Time and Motion Study Expert and Plant Engineer prior to his present position. He is a graduate of Case Institute of Technology, a professional engineer with membership in the American Society of Mechanical Engineers, American Society of Plant Engineers, and the Cleveland Engineering Society.

We built a bomb shelter for our employees. I will tell you why we built it and how we built it.

I would like to emphasize that I am not an authority or expert on the subject of industrial shelters. The American Society for Industrial Security thought we had a story in Cleveland worth telling to you. So, my purpose is to report what our company has done about shelters in our plants. I also will give you our appraisal of this project after having lived with it for seven years.

Cleveland would undoubtedly be a prime target in case of enemy attack. Nevertheless, when we embarked on a building program a few years ago, our management decided to stay in our present location. We were "too deeply planted" to make it practical to move, or to decentralize our operations.

No government agency suggested that we build this shelter. Our purpose was a simple and straightforward one: We just didn't feel we should gamble with the safety and the morale of our employees in uncertain times like these, without trying to reduce, as best we knew how, the risk that our employees would have to take. Our management's concern for the safety and comfort and security of our employees, led us to this investment of some \$200,000 for their well-being.

Our plant is located about a mile and a half from the center of Cleveland, and some three miles from the assumed main target area. It seemed reasonable, therefor, that we should suffer considerable damage in case of an attack.

Our next assumption was that we can replace our plant and our equipment more readily than we can our employees. We manufacture twist drills and other allied tools essential to both civilian and wartime economies, and normally employ about 1,880 people. A great majority of these people are highly skilled, and we feel they are the backbone of our business and surely deserve as much consideration for their safety as any other company asset.

The skills and arts developed in our people were brought home pretty strongly several years ago when we started a small subsidiary in a foreign country. Until we tried to manufacture tools with inexperienced labor, we had never truly realized the great wealth of arts and knowledge our people possess. And we learned that these talents cannot be written into specifications on a blueprint.

The Federal Government now assures us that in event of a nuclear attack on this Country, shelters—especially fallout shelters—offer the best single non-military defense measure for the protection of the greatest number of our people. We have such shelter and we hope to protect our people—our employees.

Our plant consists of about fifteen buildings up to six stories in height and covering about one complete city block, for a total area of approximately 600,000 square feet.

The opportunity came to build this shelter when we started a plan of modernization and construction, at which time we removed old inadequate buildings and replaced them with a modern structure. Had we not begun this program, I doubt whether an adequate shelter would have been built, because of the tremendous costs involved in construction of such a facility separately. With our plans calling for a new five-story manufacturing building and a three-story connecting wing, the management considered it now within economic reason to incorporate this shelter in connection with this building.

The decision to build the shelter was just the beginning. It brought out a host of problems completely new to us, and after trying to collect information we found it was completely new to a lot of people.

The first problem had to do with the shelter's design. How large should it be? How many square feet should we allow for each person? How should we design the shelter for maximum protection with reasonable cost? How should we ventilate the shelter? Light it? Heat it? What were we to do about our water supply, our sanitary facilities, our means of communication?

It startled us to learn that we could at that time find no one, inside of government or outside, that could provide specific answers to our questions about shelter design, or even much practical information about allied problems along this line. Just to mention a side thought, two requests for shelter information that we made to the government traveled the rounds of various government agencies and ended up with them seeking the answers from us. So the burden of the research fell on us and our architectural engineers. We were pioneering, in effect, in an area completely foreign to normal plant operation. Today the story is different. The Office of Civil and Defense Mobilization, through its Shelter Office and Industry Office, can furnish standards and specifications for a great variety of fallout shelters.

We may never know whether the solutions were right, and we hope and trust it is never proven, but in the interest of helping others over some of these hurdles we faced, here's the story of what we have done.

Our Company's preparedness program has been set up in two distinct phases. We call them Plan I and Plan II. Plan I provides for maintenance of adequate protection when an attack seems reasonably remote, such as we are under today. Under it we have trained a nucleus of employees. They have become a group for training more employees when it becomes necessary to institute Plan II.



Locker Room in basement of bomb shelter.

Under Plan I, approximately 125 of our plant personnel-including a number of foremen, executives, and maintenance men-have been given basic civilian defense training. In this area we found considerable help from our local Civil Defense Organization, and we took advantage of the excellent training that the Federal Civil Defense Administration made available at the National Civil Defense Staff College and Training Center in Olney, Maryland. We had several of our men participate, with excellent results. These men are the key men in our organization. We are storing, in our present air raid shelter, small amounts of medical supplies. This is done without any additional cost by merely locating our basic dispensary supplies in this area and they are kept in fresh condition by normal usage and replacement. Should we go to Plan II, such supplies would be increased as we see fit.

We have followed somewhat the same idea in the storing of our extra maintenance supplies and using them out of this section rather than from the stockroom. This again costs us nothing extra over our general usage.

Our 80 x 250 foot shelter is heavily reinforced concrete throughout, in the basement of a five-story building—so that all of the shelter itself is under ground level.



Interior view of bomb shelter escape tunnel.

The shelter walls are twelve inches thick, as are the five intermediate protection and support walls that divide the shelter into six similar cells approximately 42 and 80 feet. The shelter itself has a usable floor area of approximately 16,000 square feet. The balance of 4,000 square feet is taken up in toilet facilities, stairwells, and column areas.

The nine foot ceiling, which is the production floor of the story above, is fourteen inches thick concrete, very heavily reinforced by large steel bars. The column spacing in the shelter area is half that considered normal for the balance of the building, which means that in this shelter area we have approximately four times the number of supporting columns that we have on the floors above. This fact and the thick, highly reinforced ceiling of the shelter gives us many times the floor loading that we normally would require and in some final checks this has been estimated to be pretty close to 3,000 pounds per square foot. We anticipate no danger of caving, therefore, even if the whole building collapses onto the first floor, the roof of the shelter.

Counting the combined thickness of all our concrete on all floors above the shelter, we have a total of seventy inches. This, at the time of construction, was considered enough to protect the shelter occupants from radiation, particularly if you add to this all of the debris, machinery, and miscellaneous items that would be piled above the top of the shelter in case of building collapse.

You must remember that at the time of the building of this structure, the only information that was really available to the public was the effects of the atomic blast at Hiroshima and Nagasaki, where it was found that reinforced concrete structures stood the blast effects best. On the basis of this information, reinforced concrete was specified in the entire manufacturing building.

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including the shelter. Much has happened since we built this shelter and we realize the inadequacies of many areas due to the higher destructive power of the hydrogen bomb.

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Our new building's ventilating system incorporated two air shafts reaching from the basement to the roof. These serve as such and also as ducts for the carrying of plant services such as electricity, water lines, sewer lines, etc. In the event of an attack, these shafts must be closed, so we are developing an emergency method of bulkheading them at first floor levels. We believe that in the case of a blast, the vents opening onto the various floors above the bulkheads would probably be blown out, thereby reducing the blast effect as it approaches the basement area. We are considering similar bulkheading in our elevator shafts. Should attack be imminent, we can drop the bulkheads into place to seal the shafts on the floors above the air raid shelter.

We have provided toilet facilities for both men and women at each end of the shelter. We have four employee's general entrances. The entrances were designed to reduce the possibility of blast effects. All of them are below the ground level, and are protected by heavy fire doors. Our present thinking, however, is that these doors are inadequate and must be strengthened with some type of portable bulkheading.

We have two emergency exits. Should the damage be moderate, employees can leave as they entered. In the event of heavy damage, they will leave by one or both of two exits that were specifically designed for this purpose. The exits are underground tunnels approximately 150 feet long and rising in the middle of a parking lot area. They terminate into two separate structures in this courtyard 150 feet apart and are more than 150 feet from the nearest buildings. To get out of these tunnels the stairs make four 90° turns, for the purpose of minimizing any blast effects that might occur on the outside.

The tunnels to these exits are heavily reinforced and are under three feet of earth. The doors to the outside, on each of these exits, were arranged to open one to the East and one to the West. This, we hope, will provide a better chance of exit regardless of direction of blast and rubble fall.

In the event of the failure of our normal power supply, power for lighting and communications and other minor needs will be supplied by the 220 volt, 37½ k.w. power generator which is housed just outside of the air raid shelter proper, in a heavily reinforced area. Automatic switching from normal to emergency operation is provided.

We avoided running utility lines through the shelter area wherever possible. They are routed through the basements of adjoining buildings—but where this was not possible, shut-offs were provided just outside of the shelter area.

Because of the possibility of contamination of outside air, we felt it unwise to ventilate the shelter

through the ordinary means. It might come in laden with smoke, gas, or radioactive materials, and, since the introduction of the hydrogen bomb and its accompanying fallout, we are sure that air contamination is a prime consideration. We felt that we must provide, within the shelter itself, some means of cleaning the air.

We couldn't predict that we could keep such a system free from the effects of the actual bombing. Our emergency power supply, moreover, would be too feeble to run heavy ventilating equipment. With 1,200 or more temporary inhabitants, however, something must be done to freshen the air. The approximate 144,000 cubic feet of air in the shelter would be all right for a short duration, but not for long.

To find a solution, we sent a man to do some researching on this problem. He uncovered information on a psychological study made by the Navy in 1948 on the U. S. S. Sailfish. This study dealt with the maintenance of life on a submarine. We learned from this study and the help given us by the Mine Safety Appliance Company of Pittsburgh, that one hundred people can live comfortably for one hour on approximately 89 cubic feet of air, provided the carbon dioxide is removed from the atmosphere. The removal of this carbon dioxide can be done by passing the contaminated air through a bed of soda lime. Thirty-seven pounds of lime will give approximately one hundred man-hours of air purification. Body odors and other pollutants can be removed by passing the air over activated charcoal or some other type of air purification.

We have built one cabinet and tested it. It is made to draw in the shelter air, remove the CO₂ and contaminants from it, and add sufficient oxygen to keep the air in the shelter at a livable level. This cabinet is built to handle three hundred man-hours. It contains one hundred pounds of soda lime and a three hundred cubic foot tank of oxygen. It is estimated that for cleaning the air for 1,200 people, we will need approximately 1,200 cubic feet of oxygen and 400 pounds of soda lime per hour. The only power required by these cabinets is for some small ventilating fans, and these could be worked by hand if necessary.

It might be interesting to comment at this point, that we have run a test in our plant using this method. We kept forty men in a closed, sealed-off room for a little over seven hours without the addition of any fresh air. We allowed the men to remain in this room without any purification for the first three hours and found that the ratings of the oxygen content and the CO₂ content followed closely to the predicted depletion. By cleaning up this air rapidly with the addition of make-up oxygen and removing CO₂, we got up to the normal air content quickly and remained at this level by the addition of the proper amount of oxygen and soda lime over the balance of the time.

At the end of this test there was no apparent indication of fatigue or nausea, or any trouble of this nature at all. The temperature had risen in the room very quickly to approximately 92°, where it remained fairly constant. The moisture rose to such a point that at the end of the test, we had approximately ½" of water on the floor of this sealed room. As the occupants were drinking a lot of beer and miscellaneous liquids, this was probably more than normally can be expected.

We found out that the city of Cleveland has a large interceptor sewer some twenty-four feet under the ground on the street adjacent to this building, and we received permission to connect the floor drains from the shelter to the sewer. This assures us of no flooding of this area in case of bad sewer destruction or water line breaks.

The water supply is one of the tougher problems, and we don't know whether we have the answers or not. We must assume that the city water supply is vulnerable. We can anticipate complete loss of pressure, contamination, or complete interruption of all water services.

Under our Plan II, a period of real emergency, it is quite possible we will buy a supply of water in hermetically sealed cans for personnel use, or just stock it in large containers. We have a 90,000 gallon underground cistern under another section of the plant, and should this remain intact, we will have ample supply of water for toilets, etc.

We may have another source of water supply in the large pipes that are in this basement, supplying the sprinkler system for the balance of the building. Should they be destroyed above ground level, there should be quite a large quantity still remaining in this fire loop that could be drained off in case of an emergency.

As we are set up now, our communications are controlled from a dispatch center in one of the middle cells in the shelter. The center is nothing more than a closed room. In it is a unit containing AM and FM radio, record player, and a public address system. We also have installed a General Electric Civil Defender Receiver which is controlled automatically from Cleveland's Civil Defense Headquarters. This will be tuned in automatically to the Conelrad warning network after the standard radio broadcasts are cut off. In addition, we are a subscriber to the Telephone Company's bell and light warning service. We have also realized the weakness of our communication to the outside and are just installing a short wave radio station which will be manned by some of our Licensed employees. We feel that this station can also be a help to the community in case of some smaller local disasters.

After you have built an air raid shelter as we have, it's only natural to try to find some way to use the facility in the normal course of the company's operations, without detracting too much from its original purpose. Here are some of the ways we are doing this:

We have found that this shelter gave us sufficient room to allow us to use one of the cells for a locker room for men. Although the lockers do take up some space, the cell is still available as a shelter.

We have used this area to conduct many training classes. Although it is not the best place for this purpose, it does afford the auxiliary space so hard to find in most plants.

Our company has used this area for several other activities. Once a year we give our employees a chest X-Ray examination. About twice a year, the Red Cross sets up this area for their blood bank donations. We have also used this area for giving our employees a Salk Vaccine. It was a great help in all of these activities, and it was appropriate that we conduct such life-saving programs in a life-saving room—a shelter.

Several years ago we were faced with the job of relocating our cafeteria and dining room to some new location, as this area was required for manufacturing purposes and our cafeteria needed extensive renovation. Although not ideal, we decided to convert a large section of the air raid shelter into a cafeteria and dining area. We believe that having this dining room a part of the air raid shelter has enhanced its value, for the following reasons:

- We have available, in case of an emergency, a large supply of good canned food and other miscellaneous supplies.
- This area, which previously was rather cold and depressing, was fixed up into a very pleasing location.
- We feel that the continual daily use by our employees of this area as a dining room, will help considerably in morale during an emergency.
 This area is now a part of their everyday working life.
- By using this area as a dining room, all our employees are at home here and are familiar with the shortest routes to this area.

We have made some study and we feel that the various sections of this air raid shelter which we have turned into a dining area, will accommodate as many people, more comfortably, by the addition of tables and chairs.

We believe that anyone who is considering either a cafeteria or an air raid shelter should consider the consolidation of these two, as one enhances the value of the other. This may allow many plants to consider the building of an air raid shelter much sooner than normally.

Now that we have had 7 years of living with this bomb shelter, and had an opportunity to re-evaluate it, we feel we made some basic mistakes in its design.

The mistake which we believe is most serious, is that we allow the elevators on each end of the building to enter the air raid shelter area. This we believe is a big weakness. It seems to us that we would have been far bette build

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If it was found necessary to have elevators reaching from the first floor to the basement, then they should be separate elevators and located for maximum protection.

Now that we are in the process of using this air raid shelter for a cafeteria and miscellaneous other activities, we find that two structural designs are interfering with good facilities.

- Our ceilings are too low, some nine feet, and minimum height of these ceilings should not be less than eleven feet.
- Our column spacing is too close and is interfering with a good restaurant and cafeteria layout.

I believe that if we were re-designing the shelter with this restaurant in mind, we would put more strength and thickness into the ceiling slab itself and space our supporting columns wider for better use of the room.

These are three major changes we would make today if we were building the shelter knowing what we know at this time. As we have done very little to this shelter since its erection, other than convert it to a cafeteria, we are just now re-evaluating it. We will probably find that we will have to spend considerable money in bulk-heading, ventilating equipment, and general strengthening improvements.

In conclusion, I would like to sum up the general thinking of our management now that we have had this shelter for some seven years.

The thinking has changed considerably since the advent of the hydrogen bomb and guided missiles, and there has been considerable change in opinions as to what is to be done with the personnel of any given area at time of attack. Some suggested evacuation, others are against it. Some recommend shelters, others feel this is inadequate.

I think you will agree that people today working at the Cleveland Twist Drill Company stand a better chance of survival in case of an attack than people working in other plants not so well provided. If this is so, then we have accomplished our purpose.

We also feel, after living with this for seven years, that it has been an asset to the morale of our employees. We have had numerous comments indicating such a reaction.

We have received many compliments from outsiders who come to help us in many of the programs that take place in this area.

When we built the shelter, we considered the cost of construction as a complete capital loss. This has not proved to be the case, however, because we gained 12,000 square feet of manufacturing space by relocating the cafeteria.

In conclusion, if you should ask our management or any of our employees whether our air raid shelter has been a success, the answer would be a positive "Yes."



The use of approved and properly designed security systems is now a recognized standard in safeguarding our nation's security installations.

Automatic intrusion detection systems are designed to safeguard huge outdoor areas or a single room.

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A NATIONWIDE ORGANIZATION 155 Sixth Avenue, New York 13, N.Y.

Shelters in Industrial Plants



By Carlton E. Brown Plant Engineer The Cincinnati Milling Machine Co. Cincinnati, Ohio

Mr. Brown has a degree in Mechanical Engineering from the University of Cincinnati, and has served in various capacities with the Cincinnati Milling Machine Company since 1919, including maintenance engineering, methods engineering, research engineering, and plant engineering work. He is a registered mechanical and electrical engineer in Ohio and has served as engineering advisor in the planning of a control center and shelter for the Ohio Valley Civil Defense Authority in Cincinnati. Currently he is in charge of all building construction, maintenance, security and design, including utilities and power-house supervision. In this capacity, he supervised the construction of three shelter areas for the company.

With the development of more powerful nuclear weapons and fast and accurate methods of delivering such weapons with intercontinental ballistic and guided missiles, it is clear that we must energetically develop all practical countermeasures possible for the protection of our citizens and industries. The recent increase in world tension has brought forcefully to the attention of all citizens the necessity for civil defense and preparedness for survival in case of enemy attack.

Although we have developed excellent defense through our military forces, they obviously cannot guarantee 100% protection. Unquestionably then, governments at all levels, industries, and individuals, have definite responsibilities in planning for home front protection and survival. Preparation for survival is an individual problem. We must not expect Government to prepare our homes and plants. This is our job. Every individual, family, and home should be prepared for civil defense. And every industrial plant, institution, and facility should be organized and prepared for survival.

The two major protective measures advocated by our civil defense organizations are (1) planned evacuation, and (2) shelter.

In industry we must plan also for protecting our corporate structure and plant property. Such protective measures include organizing and training for self-help, planning for prevention of sabotage and espionage, protecting vital industrial records, and planning for continuity of management, and emergency repair and restoration, coupled with participation in mutual aid associations for civil defense, deconcentration of production, and dispersal of new industrial plants.

At the Cincinnati Milling Machine Company our most important asset is our trained, dedicated, and efficient work force-our employees. We believe the best way to save the lives of our employees and contribute to national security is by construction of shelters in our plants. So, in addition to the other activities for

protecting life and property at our plants in event of national emergency, we built shelters for our employees. Of course, we have made plans also to protect our plant property and preserve our corporate structure.

Our Company has followed the policy of providing shelter wherever building construction conditions permit, and in the construction of new buildings.

Our first employee shelter was built to conform to design criteria based on the effects of early atomic weapons. Our later shelters are of heavier construction, and are designed on the basis of larger nuclear

In the development of our shelter plans, we consulted with engineers and technicians of the Federal Civil Defense Administration (now Office of Civil and Defense Mobilization). We were advised regarding mass thickness of walls and concrete slabs, limitations on openings into the shelter, shielding of entranceways, amount of floor space per occupant, sanitation facilities, food, medical supplies, water supply, garbage disposal, bedding, seats, ventilation and heating requirements, emergency power needs, fire prevention, lighting intensities, communications equipment, and a variety of miscellaneous requirements for adequate employee shelter.*

The largest of our shelters has a capacity for 1300 people. The Communications and Control Center is located in this shelter. There is a multiple ramp baffled approach. It is equipped with toilets, first aid, and food supplies. There is a baffled emergency exit, and concrete-shielded air inlet and fan room.

Another of our shelters will accommodate approximately 1100 people. The approach is by 10% ramp whi pass Sani

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^{*} Publications are available from State and Local Civil Defense Officials and the Office of Civil and Defense Mobilization which describes building designs and specifications for construction of shelters and for determining appropriate shelter areas in existing buildings.

which will eventually extend to a walled highway underpass. There is a 39-inch earth and clay radiation shield. Sanitary sewage disposal for this unit is provided by duplex cast iron sumps of 10 cubic yard capacity each, and power pumps. Emergency power-generating equipment is provided.

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Our most recent shelter unit is designed to accommodate 150 people. The entry is well baffled.

All of our shelters contain adequate sanitary toilet facilities and ventilation equipment capable of providing an adequate supply of clean air.

All air is filtered through a particulate Cambridgetype filter to assure freedom from radioactive fallout dust. Emergency power equipment is provided in all units. All lighting fixtures are made of metal in order to avoid injury from shattering glass.

In operation, the plants are zoned so that employees can reach shelter in a maximum time of 5 minutes from their work place.

Many who visit our plant to see our employee shelters are interested in construction costs. Our per person costs vary from \$202 to \$249. Of course, building structure costs varied also. High as the cost may seem, we feel our shelters are a small investment to preserve our most precious asset—our employees, and to preserve America's future.

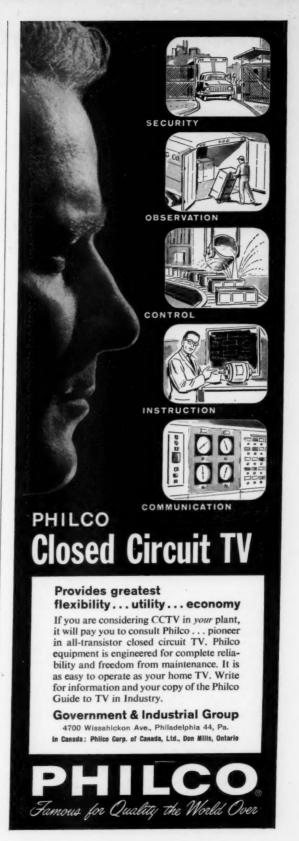
If never used for shelter, which we pray will not be necessary, our shelters are not idle investments. The shelter areas serve a dual purpose. The shelter areas are used for recreation, for employee assemblies, and for snack and coffee break purposes.

When shelter areas are used regularly, there are certain psychological advantages that accrue. The employees become familiar with their surroundings, they know where the shelter is located, they know the proper route and approach to follow, and therefore are less liable to panic in time of emergency.

Yes, even if we should achieve the ultimate goal of peace in the world, our shelters will not be a capital loss. Such areas make wonderful file and record storage rooms. And, with the rapid increase in paper work in industry, the indications are we will need more file and records storage capacity.

Based on our experience in construction and use of shelters in our plants, and the serious need for protecting the lives of employees, I urge and recommend that all industrial managements immediately designate shelter areas in existing plants, and include shelters in the construction of new plants.

At the Cincinnati Milling Machine Company, we look upon shelters as a kind of accident insurance. We are willing to pay the premiums, but we hope we will never have an accident.



The Plant Security System for Prevention of Sabotage and Espionage



By Albert T. Deere
General Superintendent of
Industrial Security
Texas Division
The Dow Chemical Company
Freeport, Texas

Mr. Deere was head of civil defense and disaster activities in his community during World War II and has been in charge of security and disaster planning for the Texas Division of his company since 1941. He is a Charter member, director, former Chairman of the Board, and former national president of the American Society for Industrial Security.

Currently, he is Chairman of the Disaster Preparedness and Relief Committee, American Red Cross, for this county, which organization worked actively in the Texas City disaster.

He appeared as guest lecturer and on panels and disaster preparedness programs, locally and nationally, over a period of many years and has played a leading role in developing and promoting plans and programs for advanced detection and reporting of hurricanes and other natural disasters.

The American people, and in fact, all the people of the Free World, have traditionally associated "war" with gunfire, preceded by a formal declaration, and then with action designed to win. Our Constitution and statutes are based on the premise that, when we are at war, war measures are invoked and intercourse with the enemy is cut off. For certain acts "in time of war," the penalties are death, while, for the same acts "in time of peace," they are much less.

Gunfire or military action is only one means of attack. We can be effectively attacked by sabotage. The Federal Civil Defense Act of 1950 recognizes this in Section 3a which states, "The term 'attack' means any attack or series of attacks by an enemy of the United States causing, or which may cause, substantial damage or injury to the civilian property or persons in the United States in any manner by sabotage or by the use of bombs, shell fire, or atomic, radiological, chemical, bacteriological, or biological means, or other weapons or processes..."

Industrial sabotage is the most effective method that can be applied against a national defense emergency effort. It is an ingenious method of warfare. Industrial sabotage is a basic doctrine of the Communist Party and other revolutionary bodies. The undeniable existence of this doctrine, the highly effective results which may be accomplished by the skillful employment of sabotage, and the known existence of substantial groups within this Country available and willing to undertake such work, place this hazard higher upon the list of risks confronted by our industry than at any time in the history of this Country.

Also we must constantly face warfare by espionage, which includes the collection of information by enemy agents that contributes to an evaluation of the Nation's war potential, and which may be used to advantage by an enemy in subversive activities and armed force attack. The very nature of many industries makes it difficult to conceal many phases of their operations. The enemy will be continuously endeavoring, long prior to an actual armed attack, to ascertain where and what targets should be attacked. Before risking trained men. expensive equipment and costly munitions, they want assurance that the destruction of the targets selected will appreciably decrease our ability to wage war. He will further endeavor continuously, after the initial attack, to obtain the same information in order to mount additional attacks. Espionage may be rendered ineffective or made more difficult only by the application of good protective measures.

Today we are engaged in a new kind of warfare—the "cold war." There is need for greater understanding and appreciation of the seriousness of the "cold war" method of conquest. Through the cold war concept, the "enemy" is aggressively making much more headway toward conquering the world than any other aggressor the world has ever known. It is important, therefore, that all understand the country is "at war" in every sense of the word, and wartime security measures should prevail.

Internal security becomes actually the first line of defense in cold war. However, there is misunderstanding by many regarding the importance of rigid security measures for prevention of sabotage and espionage in the absence of a shooting war.

Cost is an influencing factor in reduction of industrial security measures. Cost-conscious management will cut where it does not clearly understand the purpose or need for the expenditure. However, industrial management is responsible for protection of employees, plants and processes from sabotage and espionage.

The well-rounded industrial security department should have three primary functions: physical security, personnel security, and document security.

Physical Security—Good physical security calls for adequate perimeter barriers, either natural or otherwise; that they be kept in a good state of repair and be patrolled or otherwise protected twenty-four hours the u depart the p while depart of all The l

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daily. All openings, such as gates in the fence lines and bridges over water barriers, when open, should have the undivided attention of a member of the security department. Railroad equipment moving to and from the plant should be inspected upon entering, escorted while within the fenced area, and reinspected upon departure. At each opening, a log should be maintained of all vehicles or other such traffic entering or leaving. The log should include such information as the name of the operator, the vehicle number, the company or



Industrial Security Uniformed Employee Fingerprinting a New Employee—All New Dow and Contractor Employees Who Enter the Texas Division Plant Are Fingerprinted.

individual represented, date and time of entering or leaving the enclosed area, and some indication of the mission.

Each employee should be furnished a tamper-proof company badge or identification card, bearing his photograph, signature, and physical description. On entering into the enclosed plant area, each employee should be required to present this identification to the attendant on duty at the point of entrance, whether he be in a vehicle or on foot. Such badges or identification material should be issued by the security department only after positive identification of the individual.

Though some industrial facilities do not have socalled restricted areas, those that do should have the badges and identification cards coded in such a manner that the employee be permitted only in the area or areas in which he has official business.

A complete escort system for the accompaniment of all visitors or others not regularly employed is most desirable. Escorts need not be members of the security department, though desirable, and often are.

Badges and identification for contractor employees



Industrial Security Uniformed Employee Operating the Plant Key Telephone Emergency Seizure System at Dow Chemical Company Texas Division Plant.

should be distinctively different to that of company employees.

Each security employee should be trained in fire fighting and first aid, with mandatory refresher courses taken periodically. At no time should a security employee be without supervision.

Most industries have discontinued the practice of security department employees wearing side arms. Firearms, even so, should be immediately available, should their need arise.

A well secured plant should be well lighted, particularly along perimeter barriers.

One of the more important items in industrial security is communication. Ideally, a department should have a 24-hour radio system, with ample mobile units, car and the hand-carry type. The radio base station should be equipped with auxiliary power. All such equipment, along with other emergency equipment, of course, should be checked regularly.

Some industries are installing what is known as the automatic telephone seizure system, which permits the seizure of certain key telephones within the plant system. In event of sudden emergency, key telephones can be seized for emergency notification, even though they may be in use at the time.

Personnel Security—Screening of job applicants and employees to eliminate potential espionage and sabotage agents and other security risks is important in peacetime and is extremely important in time of a national defense emergency. For the results of such screening to be most effective in an emergency, it is desirable that they be incorporated into standard personnel policies for peacetime as well as for times of emergency.

A personnel security questionnaire is essential in the investigation of both applicants and employees. The filled-out security questionnaire should be screened for completeness, and in the case of applicants, obvious undesirables eliminated from further consideration. A responsible management official should then conduct sufficient investigation to assure that the applicant's or employee's character, associations, and suitability for employment are satisfactory.

The period covered by a background investigation should be the latest 10 years. However, if unfavorable information is disclosed, the period may be greater in order that the unfavorable information may be verified or developed further.

It should be noted that cognizance must be taken of the "anti-screening" prohibitions under the Fair Employment Practices Act (FEPA) in some 16 States.

Fingerprinting is necessary to assure positive identification, the most important requisite to investigation of personnel. Although the Federal Government is not accepting fingerprint records from private industry for processing purposes, some assistance may be obtained from other law enforcement agencies and private investigators and it is recommended that duplicate sets of prints be obtained.

Document Security—Perhaps one of the most insidious types of espionage is that of obtaining from various sources a vast mass of detailed, accurate data relative to the vital facilities of this country which may result in great loss to our industrial complex. These data may be developed piecemeal, through contributions of many agents whose fragmentary reports fit together like pieces of a jigsaw puzzle to complete a precise picture of the industrial structure.

Espionage agents specifically seek information such as: capacity, rate of production, industrial mobilization schedules, and details of orders on hand; specifications of products; test records of newly developed items or equipment; sources of raw materials and components; destination of completed products and transportation routes; data on production methods; critical points and possible methods of effective sabotage; measures in force for security and to prevent sabotage, such as, frequency of inspections by guards and their dependability; names of dissatisfied employees, former employees, and nonemployees who might be susceptible and utilized for subversive plans.

Espionage agents may be expected to use great ingenuity in obtaining information by: infiltrating plants as employees, visitors, inspectors, or by other means; obtaining information from employees by (1) stealing, (2) purchasing, or (3) encouraging them to "talk shop"; stealing information from records or other sources; using various means of reproducing documents, products, processes, equipment, or working models; using "fronts," such as commercial concerns, travel agencies, import-export associations, scientific organizations, insurance agencies, businessmen's groups, and other organizations to obtain confidential information or pertinent statistical information which can be translated into strategic information; using threats of danger to friends or relatives of an employee, to obtain information; using blackmail techniques by threatening to expose intimate and personal details concerning an individual; skillful extraction of information from members of the family or close friends of an employee: picking up information at social gatherings; personal observation of production operations, test runs, shipment of finished product, or confidential papers; securing information from waste and carbon paper and other discarded records; attempting subversion by offers of money or by playing on the emotions such as love, hatred, desire for power, etc.

In general, espionage may be rendered ineffective or made more difficult by the application of protective measures such as, a careful loyalty check of personnel, particularly before employment; prevention of unauthorized entry to the premises; special guarding and careful handling as well as safekeeping of classified material; controlled burning of waste paper; restriction of movement within the facility; and security education and training of employees and others who have information on the facility's activities.

CONCLUSION

The Federal Bureau of Investigation has advised that subversive activities today far exceed in seriousness any that we have previously had in this Country. The Communist Party, USA, though reduced in membership, remains as fanatical as ever and as completely devoted to the world-conquering objectives of international communism as it has been at any time since its inception in 1919. Subversive activities in this Country continue to pose a very grave problem, especially in the light of continuing intelligence activities of foreign communist nations directed daily against the security of our Country. We can expect no cessation of these operations.

Since it is impossible to predict with any degree of accuracy when the tempo of a "cold war" may be stepped up to include widespread subversive activities or actual enemy attack, it is of prime importance that security plans covering such conditions be made so that they can be placed in effect without delay. Advance planning is imperative. Plans should be well formulated and understood by key employees so that no time will be lost when an emergency occurs.

Investigation of actual or suspected espionage, sabotage, or other subversive activity is a function of the Federal Bureau of Investigation. If an employment investigation indicates a basis for suspicion of espionage, sabotage, or other subversive activity, this information should be reported immediately to the nearest field office of the Federal Bureau of Investigation.

The question of how far, under certain conditions, a particular industrial plant should go in the way of actual preparation for physical security, personnel security, and document security, is primarily a management decision. This decision should take into consideration the international situation, the character and importance of the requirements for continued operations, geographic location, economic, and all other pertinent factors.

A well-trained security force is vital to industrial security. Mechanical and electronic devices are excellent aids. But, no mechanical, electronic or other device can replace a well-trained security officer in the performance of his duties in safeguarding an industrial plant or facility against sabotage and espionage.

ATTENTION-Civil Defense Coordinators

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Industrial Mutual Aid Associations for Emergencies



By James B. Stone
President
Kanawha Valley Industrial
Emergency Planning Council
Charleston, West Virginia

Mr. Stone has been employed by the Union Carbide Chemicals Company, South Charleston, West Virginia, for the past 12 years. At present he is Assistant to the Manager, Safety and Fire Protection Department. Since 1956, he has served as Staff Assistant to the State Civil Defense Director of West Virginia. He assisted in the compilation of the Operational Survival Plan for the State. He has acted in the capacity of Director of the Intelligence Division for the State of West Virginia Civil Defense since 1958. He has been active in the Kanawha Valley Industrial Emergency Planning Council since 1956.

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The normal pursuits of any industrial neighborhood justifies a practical emergency plan. Proper planning should take into consideration catastrophes caused by natural disasters, man-made disasters, transportation accidents, and/or enemy action. Dramatic personal or firsthand experience, and the opportunity to learn from others have proven, beyond a doubt, that industrial mutual aid organizations are JUST GOOD BUSINESS.

The mutual aid organization must be tried and tested with drills and dry runs to prove effective during emergencies. The preplanning phase is the most important to assure a solid foundation for the new organization. A meeting of interested persons should be called to begin to formulate plans for the organization and define a clear-cut approach to management. A must for successful mutual aid organizations is to obtain managements' endorsement.

Once management has approved the need of the mutual aid organization, the first step should be the formulation of emergency procedures. To help in the preparation of emergency plans, it is important to understand the local "KNOWS" of emergency planning. They are as follows:

Know Your Hazards—Calculate your risks; learn conditions under which materials are hazardous; determine safe job methods and proper safeguards or techniques for controlling hazards.

Know Your Facilities—Set up plant standards; determine limitations of facilities and layout which may affect emergency control; prevent mechanical failures through proper operation, maintenance, inspection and protection; learn the potential consequences of disrupted utilities, failures of equipment, protection outages, and human error.

Know Your People—Understand the individuals involved in your emergency plan; appraise their

individual and collective abilities; condition their attitudes through clearly defined leadership and education; develop personal traits of dependability, ingenuity, fortitude, the will to cooperate, and common sense.

Know Your Community—Recognize that any serious emergency affects or involves the public to some degree; prearrange mutual aid agreements with municipal protection agencies; study and plan a well coordinated civil defense program including joint efforts in controlling emergencies or mobilizing resources on alert; make your community stronger and more self-sufficient.

Know Your Emergency Plans—Develop emergency procedures through cooperative action of protection agencies, industries, and utilities; stress primary responsibility for preventing and controlling emergencies rests with the individual; the recognition of hazards and techniques or equipment needed to cope with emergencies; plans must define how and when to call for assistance; apply principle of self-sufficiency to maximum degree in building plant organization; drill regularly and make sure everyone involved is well informed and trained.

Once the problems are clear in the minds of the planners, a study should be made of the organization's relations with other agencies which share common objectives and then begin working on specific local problems that would require cooperative action. Agencies which may have common objectives with those of industry could include protection agencies, utilities, transportation, and communications.

The coverage of a mutual aid organization and its membership would largely depend on local conditions. Natural topography and problems in traffic control would also be major factors for membership qualifications. The total industrial complex with the concentration of industry would also be a determining factor for membership. Membership should not be limited by political subdivisions or by hypothetical boundaries.

Every member plant of a mutual aid organization should have a sound in-plant emergency procedure based on practical relations with private and public protection agencies.

The emergency procedures should cover all aspects of industrial mutual aid and the following recommended committees could very readily provide the solutions for many of the plans.

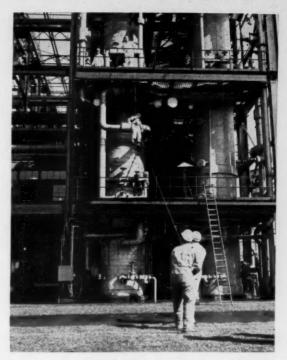
Membership and By-Laws Committee—The Membership and By-Laws Committee recommends to the group a sound basis for membership and it maintains a roster which includes the name, address, business and home phones of all representatives and alternates. In general, membership is restricted to industries involved in manufacture, storage or handling of hazardous materials, utility companies which serve industry and any industrial plant. Representatives of other organizations are invited to participate in group discussions wherein they are directly concerned or their counsel is sought.

Associate membership is granted only to civic, governmental and public organizations or agencies, which cannot qualify for regular and full membership under the provisions of the Plan. Associate membership must be approved by the Board of Directors and the majority of the official council members. Associate membership shall not carry the right to vote on any motion before the council or Board of Directors. Their advice and counsel is sought by the chairman and the



Dry runs utilizing the services of local fire departments, police organizations, ambulance services, and the civil defense organization should be conducted frequently to test emergency plans.

Executive Committee whenever it is felt their assistance is needed. However, it is expected that they should feel free to give their opinions and judgments during the discussion of any subject of mutual concern. It shall be the chairman's prerogative, however, to limit their discussion whenever he feels it is advisable to do so.



Rescue squad conducts simulated exercise. These trained rescue squads can be utilized in member plants if emergencies are of the nature that would require their special skills.

This committee should be composed of past chairmen of the Board of Directors. In addition to passing on the requests for membership in the council and seeing that invitations for membership are sent to eligible organizations who have not yet joined the council, they also prepare and review by-laws that might become necessary in the future. This committee serves as an informal steering committee to which difficult and unusual problems or situations may be referred for study by the Board of Directors.

Security and Traffic Control Committee—The Security and Traffic Control Committee should be particularly active since traffic control is considered to be one of the most vital problems of the industrial mutual aid organization.

An industrial zone plan should be developed and maps should be prepared which show all pertinent information concerning the plan. The zoning plan should provide for limiting the use of highways leading into any zone in which an emergency could exist, to emergency equipment and authorized personnel. The blocking of highways and diversion of traffic is essentially a police function. The probability of delays in the setting up of satisfactory traffic barricades by public authority prompts the temporary use of plant guards for this purpose.

Under agreements with the State Police, endorsed by municipal and county police, plant guards can erect and maintain roadblocks until relieved by one of the abovenoted agencies. It is also recognized that in an emergency key personnel of the plant in which the emergency exists will be needed for various essential duties. In order for the police to assist them in getting through road blocks and into the area in which needed, there must be some definite and standardized system of identification. Most



State, county, and local police agencies should be trained during dry runs to divert all, except emergency vehicles and essential personnel, from the emergency site.

plants have a plant identification system. Additions can be made to the back of the standard plant passes requesting law enforcement officers to pass the holder through road blocks. This addition could be colored so that the pass can be easily recognizable.

There are other members of the organization, such as utility companies, who will be urgently needed in any emergency zone. Obviously, these specific utilities are not located in all zones; therefore, it is necessary for key personnel to have authority to move at will throughout the entire area. A pass for key personnel of such companies should be issued similar to that for key personnel of the plants.

Special passes can be issued to the associate members of the press, radio, and TV to insure prompt dissemination of information to the public.

Communications Committee—The emergency Communications Committee should establish a plan which provides for communications under emergency conditions to the areas concerned. The committee can consist of representatives from the commercial telephone and telegraph companies, the domestic radio and television stations, the press and the amateur radio network.

The first line of communication within the plant or utility is the individual plant telephone system, fire alarm system, or two-way radio installations. It is strongly recommended that every effort be made to encourage the installation of two-way radio equipment in every vehicle utilized in plant protection. There is no

substitute for this facility. It is undoubtedly the most important communication link in coping with an emergency situation.

The land line facilities are the first line of communication between plants and utilities. These facilities are normally dependable and provide for maximum coverage. It is, however, a possibility that land line facilities may be rendered inoperative due to physical damage, or may labor under reduced efficiencies as a result of traffic loads placed upon them. It is important to discourage unnecessary telephone usage by the public during emergency periods.

The domestic radio, television, and press outlets can assist materially in alleviating load block conditions of the land line facilities by keeping the public abreast of developments and discouraging unnecessary telephone usage. The public should be instructed that use of the telephone and roadways during emergencies can only hinder those concerned with restoration of conditions to normal. Public panic can greatly aggravate disaster conditions.

The local radio stations can develop efficient methods for cooperating in "on-the-scene" coverage of an emergency situation. A city network is a relatively simple system in which all stations can have radio lines terminating in a common point. This makes it possible for any station to feed a program to any or all the other stations by making a simple patch on the jack panel at the control station. This system can be utilized almost daily for commercial purposes, and occasionally for pool broadcasts of special events. It is most effectively used in time of emergency when all stations broadcast "on-the-spot" coverage and become the voice of direction for the general public. Messages of officials from the scene are then transmitted over all stations to the public assuring maximum dissemination. Actual reporting is accomplished over regular telephone lines which can be fed "on air." Any official spokesman for a plant or of the city, county, or state government may request the activation of the city net and within minutes it could be in operation.

The amateur radio network, while primarily a last resort facility in communications, can relieve a considerable load from the land line facilities. Most of the "Ham Radio" equipment, while dependent upon commercial power, can be moved into affected areas and set up to operate as portable stations. Some mobile equipment is installed in personal cars.

Upon declaration of an emergency involving industrial or utility facilities, emergency communications shall come into play as follows:

 The press and police departments will be notified in accordance with procedures established within the individual plants. Notification of the local senior police agency constitutes the declaration that an emergency situation exists which, in turn, authorizes "civil defense" police action as needed.

(Continued on page 98)

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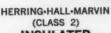
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Industrial Mutual Aid

(Continued from page 96)

- The domestic radio, television, and press keep the public informed of developments based on reporter observations and information furnished by industrial mutual aid members. These mediums of communication will also be used to discourage telephone usage and unnecessary highway travel.
- The local police shall notify any amateur radio operator listed in his area of the existing disaster.
- The amateur contacted shall notify, or have notified, all other amateur radio operators in his area of the emergency.
- Upon notification, each amateur will energize his equipment on the mustering network frequency.
- The first amateur operator on frequency can act as net control station until such time as other appointed communications center comes on frequency.
- 7. The amateur nearest the area of the disaster equipped with mobile equipment will be dispatched to the scene and report his presence to the police car there, and to the guard on the main gate in the case of an industrial plant.
- Additional mobile and portable stations can be deployed as required by prevailing conditions.

Contact may be made with the radio amateur network by contacting any of the amateurs listed. In event land line facilities are inoperative, a personal messenger system can be activated.



Realistic in-plant emergency drills should be conducted periodically to keep member plants personnel at a high degree of efficiency to handle emergencies.

Material Assistance Committee—The Material Assistance Committee should have the assignment to develop and maintain a definite plan and procedure for one organization member to render material assistance to another. This plan is to establish a procedure for calling for aid and to determine the basis on which such aid is given. Personnel and equipment from other

plants are placed at the disposal of the plant involved in an emergency until such time as the emergency no longer exists or until withdrawn by the lender. The recipient of any aid agrees to replacement of any emergency facilities damaged or destroyed or will return facilities in reasonably good condition. The committee can develop the above through a simple workable plan and should incorporate communications and transportation problem solutions in the plan; for example, identity of emergency vehicles for passing through police lines, and fixed points of delivery to the plant involved in the emergency.

Emphasis should be placed upon self-sufficiency and a willingness to loan indicates a moral right to receive help in any specific category of equipment or materials. In no case are inventories listed except within the individual member organizations; availability, however, can be indicated in a manual developed for this purpose.

Risk Evaluation Committee—The Risk Evaluation Committee should be one of the first committees organized as an integral part of the emergency planning committee. This committee is primarily concerned with the study and evaluation of ideas and methods whereby each of the member organizations may become cognizant of existent hazards or potential emergency conditions.

An important committee function is to serve as a source for reference materials concerning disaster plans and emergency control techniques. Studies are made to devise methods of investigation. Presentation of information about past emergencies is given the membership. This committee can be formed to serve only in an advisory capacity and then only at the specific request of the member requiring the assistance. The emergency organization should not initiate specific investigations of or make recommendations concerning its members.

There are many advantages to advanced planning. Some are as follows:

- Lessen disaster potential by anticipating and correcting hazardous conditions.
- 2. Provide faster reaction in an emergency.
- 3. Minimize losses.
- 4. Re-establish more readily the normal situation.
- Obtain a greater sense of security through the knowledge that one has prepared himself to the best of human ability to meet likely situations.
- Secure better public relations through preparation to assist effectively in controlling emergencies which may occur in the community.
- 7. Lessen the chances of recurrence.
- Establish a firm basis for mutual assistance in time of great need, such as flood, conflagration, or enemy action.

Specific problems should be assigned to this committee. These can include methods and procedures of

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inspection and risk evaluation of hazards; emergency disaster planning; methods and procedures of investigating after a disaster; formulation and control of reference materials; standardization of equipment; and types of alternate emergency protection.

All members should be encouraged to participate in work of national protection associations.

Public Relations Committee—The Public Relations Committee's responsibility is to announce the organization's objectives, development, and future plans. Cooperation of newspapers, radio, and television is considered an essential part of the emergency planning council's work. Reporting of emergencies when they occur in a manner to insure maximum cooperation with agencies which disseminate public information is very important. The council should recognize the fact that



Local police agencies should be instructed in the nature of potential emergencies so that traffic can be diverted from the emergency site.

the public should get a true picture or factual account of the emergency. Due consideration must be given to the problem of avoiding panic and to insure against sensationalism for the sake of making news. Reporting the activities of the emergency planning council, and seeking public support for the emergency plans placed in effect are the Public Relations Committee's job. Press or radio releases and educational releases presented to inform the public must, of necessity, be channeled. If a workable emergency plan is to be established, it is mandatory that the public be educated to do its part. In this public relations program, the council should release no information concerning emergency experience of any of the member plants or utility companies. This emergency planning group is not in business to advertise or have pictures in the paper, but on the other hand, the public should know that a cooperative authority for handling industrial emergencies does exist.

Because of its value as a guide to those organizing an industrial plant emergency plan or a mutual aid system,

the following tentative outline of "key points for good press relations" is included:

- Arrange within the plant's organizational setup for delegation of responsibility and authority to certain individuals for all press contacts.
- These individuals should not be seriously involved in neutralizing the effects of emergencies and/or disasters
- A serious effort should be made to insure that identity of plant press relations' people are well known to representatives of all communications media
- Form the habit of keeping the press informed of any incident having newsworthiness.
- 5. In planning the details of handling emergencies and disasters, high on the list should be the item of a working area as near as possible to the emergency scene for press representatives. This place can be equipped with telephones, typewriters, and possibly tape recorders, or at least available electric outlets for privately-owned recorders.
- All pertinent available factual information should be steered through the press room.
- Guides should be kept available to escort press representatives to the actual scene of the emergency, providing no hazard exists to them and local plant security regulations permit.
- Arrange, if possible under existing conditions, for press representatives to meet and question the plant's chief administrative officer.
- While advising the press of identity of casualties, care should be taken to suppress release of the names prior to notification of next of kin.

Radio and Television—In general, the same treatment and consideration granted the press should be granted to others in the communications field. Reference specifically is made to radio and television representatives. Some points to keep in mind are as follows:

- Keep them advised by telephone, if possible, if they are unable to come to the plant.
- 2. If they come, they will need guides and information sources to which they can refer.
- Some of them may have such equipment that vehicular transportation will be required. Trucks and even private cars may be advantageously cleared into the plant if security regulations permit.
- 4. Arangements can be made (see Communications Committee) to have such a radio-television hookup that the messages you wish transmitted need only be called into one station. Pre-arranged hookups will insure all area stations sending out identical information.
- For television pictures, a guide with a good knowledge of what is permissible to release should be provided.

(Continued on page 149)

Planning for Continuity of Management



By Lee F. Malone Security Director Burroughs Corporation Detroit, Michigan Mr. Malone was a special agent for the FBI for seven years, resigning to become Supervisor of Safety and Security for the Murray Corporation of America, Detroit, Michigan. He is a graduate of the University of West Virginia with AB and LLB degrees. He was also Superintendent of Plant Protection for Peter Kiewit Sons Company, Portsmouth, Ohio, and superintendent of Plant Protection and Security for Kaiser Motors Corporation, Willow Run, Michigan. He is a member of the American Ordnance Association. He has served ASIS as chairman of the Detroit Chapter and Vice President of the Great Lakes Region, and is now a member of the Board of Directors.

As a preliminary approach to the necessity of planning for the continuity of management, we should consider the problems of the present-day competition for competent management personnel under peacetime normal operations. It is only necessary to examine the technical and managerial employment ads in any of the large daily newspapers, the technical periodicals and the flourishing managerial employment agencies to realize the present intense competition for top-level managing personnel. This realization is only intensified by the pirating of personnel between business organizations. Further, the complicated fringe benefit plans that are entered into by business organizations and their professional managerial personnel to encourage their staying with the business organization lends further evidence as to this intense competition for personnel.

This group is a minority group in the field of business, but it commands a high value and is the keystone of the business organization arch. There is a peculiar thing about this group which they have pretty much in common. A very high percentage reside in prime attack target areas, and a high casualty experience can be expected as a result.

Business organizations, unless preparation is taken in advance, will be without competent managing personnel in a great many of its operating fields in disaster situations as a result of nuclear attack. Without qualified management groups, a business organization is like a ship without a pilot to guide it through the channels of good business practices.

The business organization executives must plan now to develop depth of positions, if this has not already been accomplished. This responsibility is a basic duty that is owed to company stockholders, to our country's defense and to themselves if they are to continue to have an active company or organization to manage.

There is also another reason for the development of job depth by emergency executive succession lists. The

Federal Civil Defense Administration, on September 8, 1954, delegated to the Secretary of Labor the responsibility of developing emergency plans for:

- (a) Utilizing the labor force.
- (b) Estimating the survival of workers by occupation and their availability for emergency work.
- (c) Establishing an emergency employment service for civil defense.
- (d) Compensating authorized workers in a civil defense emergency.
- (e) Compensating for injuries or death while engaged in civil defense activities.
- (f) Financial aid to labor made idle by enemy action.

To point out more directly the specific effect of this delegation of authority, I would like to quote from Civil Defense Technical Bulletin TB-16-5 (reprinted July 1957): "Since an unfriendly nation might aim its initial attack upon industrial concentrations of this nation, it is of primary importance that arrangements be made whereby there will be a balance between labor supply and the labor requirements in time of emergency. Planning for channeling manpower skills into priority industries and hurried retraining to fill in gaps in skills left by enemy attack is the responsibility of the Department of Labor by delegation from FCDA (now OCDM)."

Individuals with specific management skills may be reassigned under this delegation of power from one business organization to others on the basis of "priority industries" and you must be in a position to fill vacancies created by this maneuver in your management organization.

The first step to be taken in planning for the continuity of management in a business organization is to provide for emergency action by the Board of Directors. It is a legal maneuver by which the charter or bylaws of the organization are changed so that the Board of Directors is authorized to act in event of an emergency

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This type of form may be used for all levels of management succession planning. Names should be listed for each position in the sequence of desired emergency replacement. Each name may appear in a number of columns, and with varied priority of succession.

with the statutory minimum for a quorum. This minimum number, in turn, could augment their membership to the extent necessary to reconstitute the industrial corporation and get back into business following an enemy attack or major disaster.

This action should be taken now. To support this position is a quote from the Disaster Planning Course for Industry that the United States Army provides at its Industrial Defense Department Provost Marshal General's School, Fort Gordon, Georgia. In the section of the course on Personnel Continuity and on the subject matter of the legal aspects which have been mentioned just previously in this article, the following statement is made: "Under normal circumstances this is a time-consuming process which involves weeks or months when during a disaster the industrial hierarchy is subject to heavy casualties." In critical times of disaster weeks and months are too long to wait for the restoration of the management arm of an organization.

The legal aspects concerning the Board of Directors having been taken care of, emergency action for appointment of succeeding management assignments should be made. This is usually designated as the development of an "emergency executive succession list." The emergency functions for each surviving executive should be listed along with the order of succession. The list should not and cannot be regarded as a promotion list nor the subject of any other normal personnel action. It is to be clearly understood as a list for emergency use only. In the preparation of such lists consideration should be given to the geographic concentration of your organization executives. To quote again from the Industrial Defense Department, Provost Marshal General's School, Fort Gordon, Georgia, the chapter on personnel continuity: "Care should be exercised to select successors from different locations for succeeding positions to preclude loss of personnel on

the entire list as a result of the same disaster in one area." The form recommended for such list appears in Civil Defense Technical Bulletin TB-16-5 (reprinted July 1957) and is reproduced in this article.

In organizing for continuity of management this activity should be a portion of the responsibility of the Civil Defense Coordinator of the company. To insure close control and pointed interest in this facet of the over-all Civil Defense Plant Program, as a general rule one person is designated to handle the continuity of management program. He cooperates with the coordinator and top management. It is essential that he be from upper management levels and be able to wield the necessary authority and have sufficient time allotted to perform his duties.

Basically his duties are as follows:

- (a) Directing an advisory committee on the continuity of management in developing the company or plant continuity of management plan.
- (b) Promoting and helping formulate continuity planning in the companies and plants of the corporation.
- (c) Running a periodic audit of the over-all planning and progress under such planning.
- (d) Keeping various units of the company advised of changes that should be made to keep their continuity plans up-to-date.

Some organizations may not desire to put the responsibility for continuity of management in the hands of one individual. In this situation an advisory committee has been established, rather than one individual, to decide the order of management succession and the development of all necessary action for planned continuity of management. This committee must be a separate committee in addition to other committees of your over-all disaster planning effort. This committee should be composed only of top management officials. Its

make-up should be varied in its composition. It should include production, manufacturing, medical, personnel, financial, marketing and legal representation. This committee should be aware of all the secondary skills required of all executive management designations in order to organize appropriately succession lists.

The executive succession planning should be spread downward to the plant level with local subcommittees to do the plant level organizing of succession list for the plant.

Having provided for succession, it is now necessary to provide the successor with some place to work and something to work with. Again this is necessary to get back quickly into production even if it is only on a limited scale to begin with.

If the operational headquarters is destroyed, much valuable time is lost locating a new one and equipping it with machines, furniture and records. This delay may be surmounted by establishing now an alternate headquarters at a location away from prime target areas, but within a convenient traveling distance. The details of this subject matter is handled in a separate article in this publication.

In addition to the fact that the alternate headquarters must be equipped with copies of all vital records of the corporation, which is the subject matter of another article in this publication, two other matters must be planned for the efficient operation of headquarters. In one instance the financial division of an organization must be assigned the duty of planning and developing a simple emergency accounting and audit system so adequate cost records can be maintained, the financial status of the organization protected and conserved and current profit or loss status reflected. This system will be the basic foundation in taking care of the fundamental financial requirements during the period immediately following disaster conditions until time again permits a more formalized approach to accounting and auditing.

Secondly, money will be needed for prompt payment of wages, cash advance to employees and payment of bills. There will also be necessary cash purchases for emergency medical supplies, food and equipment. The treasurers activity of the company organization must be assigned the responsibility of effecting an emergency procedure for drawing company funds.

Funds should not be concentrated in one locality. This is not usually the case with multifacility operations but is a factor for smaller facilities to take under advisement. Multifacility organizations usually have dispersed fund depositories as a matter of convenience in their operations. Emergency procedures should be set up to establish formally, according to the required procedures of the company or organization, a list of individuals who are authorized to withdraw funds. Also there should be established a list of persons at various and widely separated locations who are authorized to countersign checks. A current list of all depositories, all

people authorized to withdraw company funds and authorized to countersign checks should be available in all company security storage vaults. Consideration should be given to the advisability of storing an amount of cash in the security storage vaults to cover immediate emergency purchases.

Since this is planning for emergencies and the successors have certain emergency duties to perform, the lists and plans cannot just be made and filed away. During feasibility tests of your succession lists, certain key personnel should be declared casualties. Individuals that appear on your succession list as replacements for these casualties should be allowed to carry out their emergency functions until the company can be reconstituted in the normal course of business. They should report to the alternate headquarters, make use of the essential records stored there and gather vital information from secondary sources to get the operation back on its feet for immediate limited production and into full production in the shortest possible time. Only by such testing can weaknesses of the plan be brought to light and necessary actions taken to strengthen and improve it.

In summary, such planning is vital to the very existence of your company under disaster conditions. A recovery plan is a prime responsibility of management to its stockholders as an immediate step in protecting their interest in the company. Secondly, management has a responsibility to the various levels of government under which the company lives and thrives to maintain in times of emergency and disaster a healthy climate of employment so as to maintain the morale of the people and the production of the community to combat the uncertainties of disaster. To quote from a speech of John H. Redmond, Assistant Vice President and Manager of Operations, Tar Products Division, Koppers Co., Inc., delivered at the Western Industrial Survival Conference, Los Angeles Chamber of Commerce, Los Angeles, California, March 5, 1958: "Our specific policies under our plan were: The company desires to meet to the fullest degree its responsibilities to the Nation, to our stockholders, and to our employees in providing uninterrupted operations of vital activities of the company, together with safeguarding of the company's properties and possessions." Thirdly, there is a very selfish interest on the part of management as there is in all other levels of employment to be so organized as to provide employment opportunities for themselves and others in disaster and emergency situations. Such a high standard of planning for continuity of management along with other disaster planning can maintain a production rebound and a high level of personnel morale which at the outbreak of a nuclear war may be the decisive difference in winning the struggle between the free enterprise way of life and the Communistic way of life.

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The Emergency Company Headquarters



By Kenneth E. Yandell Security Coordinator Esso Standard, Division Humble Oil and Refining Co. New York, New York

Mr. Yandell's 34 years with Esso-Standard, largely in organization and management, safety and security, particularly qualifies him to point the way to management continuity after disruption by disaster or nuclear attack. He

joined Esso-Standard in 1926, after graduation from Kansas State College. He worked in their refineries, later became safety supervisor for the Bayway Refinery, then Employee Relations Manager. After three and a half years in the Navy during World War II (discharged with rank of Commander), he was appointed secretary of the Jersey Security Committee and assisted in setting up the security program of Standard Oil of New Jersey and affiliated companies.

He is a member of the National Defense Committee of the National Association of Manufacturers; and a member of the Board of Directors on both the National Institute for Disaster Mobilization and American Society for Industrial Security. He was the first Chairman of the ASIS Emergency and Disaster Planning Committee and is a guest lecturer at the OCDM Staff College Course in Industry Defense and Mobilization and numerous Industrial Survival Conferences throughout the Nation.

The Korean conflict in 1950 served as a catalyst to reactivate on a broader scale the security measures Standard Oil Company (New Jersey) and its affiliates had effectively adopted during World War II. For several years before the outbreak in Korea, the Jersey organization had retained some of its basic security policies. These were primarily concerned with the fundamentals of plant protection. No comprehensive security plan existed.

But in the five years between World War II and the fighting in Korea, new atomic weapons had been advanced and a totally new concept of war was emerging. Under this concept of total destruction by bombs and missiles, no city of the United States could be considered absolutely safe. The security measures of World War II would obviously be inadequate in the catastrophe of World War III—should it occur.

Against this set of conditions, Jersey Standard undertook what was considered a sound and realistic security program. Its goal was to set up alternate headquarters outside New York and to draw up a master plan to continue the company's operation in event of enemy attack on one of the nation's largest, highest priority targets. At the outset, administrative control was made a responsibility of top management, thus lending the program status, urgency and enthusiasm. Functional staff members, answering to top management, were drawn from executive personnel with appropriate skills and experience. A 12-man security committee composed of upper echelon management representatives was ultimately formed to establish a comprehensive program and later to administer it.

Among the committee's earliest recommendations was a five-point program which, when quickly adopted, became the nucleus of the Jersey security program. They called for:

- 1. Remote storage of all vital corporate records.
- Designation of alternate company headquarters for emergency use.
- 3. Preparation of management succession plans.
- Amendment of corporate by-laws, where necessary, to facilitate emergency action.
- Protection of vital production, research and operating facilities against sabotage and espionage.

In 1950 an extensive project for microfilming company documents was started and a search was undertaken for a remote control center, from which the company could operate in emergencies. After considerable searching, a former rest home in a rural area, some 30 miles from New York, was selected for emergency headquarters. The property consists of a main building and several subsidiary structures occupying about 60 acres that is readily reached by all modes of transportation.

The purpose of the remote control center is to bring together, should permanent offices become untenable, the policy-making skills, executive decisions, and communications necessary to maintain vital oil supplies in time of disaster. In this role, it also serves as communication nerve center for contact with government authorities, company installations, and indirectly some 3800 employees in the New York area.

The center's main building has 50 bedrooms and baths, with accommodations for 65 persons. Use of subsidiary buildings and cots and mattresses would make it possible to double this capacity. Several improvements were undertaken to adapt the rest home to an emergency corporate home. These included:

 Construction of an underground, fireproof storage vault for microfilm copies of corporate and operating records. With old and current records already recorded and stored (some 31 million images), it has a capacity for perhaps another 10 years. Air conditioning and humidity control give the microfilmed records a storage life estimated to be around 500 years. All microfilms are duplicated and stored in the emergency head-quarters of a Middle Western affiliate company.

- Installation of microfilm processing equipment for development of the film and production of paper facsimile copies, when called for, of any filmed record. This equipment handles microfilm in 16mm, 35mm, and 70mm sizes. Eleven microfilm readers are also available.
- 3. Installation of a comprehensive communications network. This consists of a three-position telephone switchboard, serving 100 telephone extensions at the center and connecting with company installations and telephone company switchboards in several states and Washington, D. C. Alternate communications systems are provided by four teletype machines and two mobile two-way radio circuits in motor vehicles tied in with a company refinery about 25 miles away. A Gonsett type radio telephone is tied in with and a part of the County Civil Defense Coordinator's office.
- Establishment of a file room for duplicate copies of current operating records and other day-to-day data which is sent to the center daily.
- Installation of a 50kw standby electrical generator, capable of powering critical units at the center in event of a general utility failure.
- Installation of an independent water system, served by an artesian well with a capacity of 40 gallons per minute.
- Installation of chain-link fencing to enclose six acres, the area immediately surrounding most of the center's buildings.

During normal operations, the remote control center is staffed by three employees. One serves as superintendent; one is a microfilm technician, and one is a full-time records clerk. A contract service maintains a 24-hour guard on the premises.

A detailed plan for manning the center in the event of an emergency calls for assignments of Jersey Standard executives on a three-deep basis. The three cadres are designated Principal, First Alternate and Second Alternate. Should world tensions become ominous, the plan is to staff the center on a rotating basis, at intervals of one week, on a repeating cycle.

Cadre assignments are made on a geographical rather than an organizational chart basis. Thus qualified executives, living closer to the center, are assigned as principals, while higher-level management personnel, whose homes are farther away, often become Alternates. Desk space is available at the center for those preferring to commute from their homes close by. For executives living-in, bedrooms are equipped to double as offices. An emergency staff group—such as secre-

taries and clerks—in the ratio of one to every three executives, has been selected on the same geographical basis.

A contract with one of the largest industrial feeding concerns in the East provides kitchen help and food service. Under this agreement, the center is also sup-



Each department of ESSO was assigned a room to work its post-attack operations problems at the company emergency headquarters during Operation Alert.

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plied with a basic food inventory to sustain 100 persons for two weeks. The center's dining room can accommodate 100 persons for each meal.

In recent years, the center has been made available for all kinds of company meetings. Groups numbering



Officials explore files for needed information in simulated postattack exercise at ESSO emergency headquarters.

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ESSO officials consult map at company emergency headquarters showing "damage" caused by simulated attack during Operation Alert 1960.

from 15 to 70, and meeting from three to 14 days have found the center to be comfortable, convenient and economical. The surroundings lend themselves to greater productivity than city hotels, and costs per person range approximately one-half that of comparable city meetings.

Another important facet of Jersey Standard's security program is its plan to regroup employees after an attack on New York. Throughout the metropolitan area the company has established 16 reporting centers where employees may report their availability for duty. The reporting centers, tied into the emergency headquarters' communications networks, are located in nine company installations and six employee homes. Duplicates of employee personnel security cards covering some 3800 New York area employees are on file at each reporting base.

Each of the reporting centers, in time of emergency, will be staffed with 11 employees with some personnel experience or training. Also assigned to these centers will be four representatives of the company's treasurer's department, empowered to countersign checks kept on file. These are preprinted in \$25 and \$100 denominations.

To test its plan, to seek out its flaws and to maintain equipment, Jersey Standard stages periodic drills. On an average of one day per year, the company puts its plan into action and its emergency headquarters on an operational basis. On these days, usually coinciding with general civil defense "Operation Alerts," one of the three staff cadres is assigned to the remote control center for simulated emergency duty. The purpose is to keep the center and its facilities active and ready for use and to keep executives familiar with records, plans and equipment, ready for the day no one wants to see.

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Emergency Reporting Centers



By W. P. Getty

Assistant Vice President
Production Chairman
Industrial Defense Advisory
Committee
ones & Laughlin Steel Corporation

Mr. Getty has been associated with Jones & Laughlin Steel Corporation since 1936. He has served as Assistant Vice President—Steel Works; General Manager—Steel

tion; Assistant to the Vice President-Operations; Assistant General Manager of Raw Materials; Assistant to the General Manager of Raw Materials. He was graduated from the University of Pittsburgh in 1932 with a Bachelor of Science degree in Chemistry. Prior to joining J&L he was with the Weirton Steel Company. He is a member of the American Society for Metals, American Iron and Steel Institute, British Iron and Steel Institute, American Welding Society, American Institute of Mining, Metallurgical and Petroleum Engineers, Society of Automotive Engineers, Eastern States Blast Furnace and Coke Oven Association, Coal Mining Institute of America, Pittsburgh Athletic Association, Duquesne Club, and Longue Vue Country Club. He is Chairman of the Board of Trustees of Winchester Thurston School, Pittsburgh, and also a member of the Executive Board, Allegheny Council, Boy Scouts

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At some unspecified time in the future of our uncertain world, we may come face to face with the most tremendous and vital task ever presented to man—the task of meeting and overcoming a threat to the very existence of our people, our nation and our civilization.

The awesome perils of thermonuclear war have been well publicized. We know that a single hydrogen bomb is capable of wreaking incalculable devastation with blast, winds and fire to a large metropolitan area and the loss of life in such an area will be tremendous. In view of these facts, it is not unreasonable to assume that if such a weapon should strike the heart of the Golden Triangle in Pittsburgh, the Jones & Laughlin General Office would be destroyed and a large number of employees would be killed or injured to the extent that they would not be available to assume responsibilities with the Company.

The Management of the Jones & Laughlin Steel Corporation realized these potential dangers several years ago and have included an Emergency Reporting Center Plan as a part of their Emergency Headquarters program. Following a disaster, it is essential that Management be informed as to the employees who have survived and are available if needed, and, on the assumption that the General Office has been destroyed, there must be a plan for gathering this information.

The Corporation's Emergency Headquarters Plan states that there shall be nine Emergency Reporting Centers surrounding the metropolitan area of Pittsburgh. Seven of the Reporting Centers are in the homes of employees and two are in present company-owned facilities. The locations were selected on the basis of approximately one hundred (100) employees per Reporting Center and most of the employees could walk to the centers during an emergency condition if necessary.

A map, with instructions on how to reach each Reporting Center, has been given to all Pittsburgh General Office employees. A letter attached to the map reads:

"To General Office Employees:

"The Corporation has developed an Emergency Headquarters Plan for the General Office personnel. The plan states that, if an enemy attack rendered the present General Office facilities unsuitable for business operations, the employees would be expected to report to pre-designated Reporting Centers.

"These Reporting Centers were selected near the perimeter of Pittsburgh as indicated on the attached map. Seven of these Centers are located in homes of employees; two centers, the Marine Ways at Floreste and Aliquippa Works Reception Room, are J&L facilities.

"In the event such a disaster occurred the employees of the General Office would report to the Center nearest their homes as soon as conditions warrant. At that time the assigned Reporting Center personnel would advise those reporting as to where and when to report for work.

"It is recommended that this information be stored in your home in the Air Raid Instruction envelope provided by the Corporation and that it be placed in a safe accessible location."

Each Reporting Center has a special locked cabinet containing records that would be of considerable value if disaster should strike. Among the records and materials stored at the Center are:

- 1 Private telephone extension.
- 1 metal sign reading "Reporting Center—Jones & Laughlin Steel Corporation." The sign is on a stake and will be placed in front of the Reporting Center during a disaster period for proper identification.
- 1 copy of the Emergency Headquarters Plan for the General Office organization.
- 1 copy of J&L's General Office telephone directory which includes each employee's home telephone listing.

- 1 copy each of the Classified and Alphabetical directories of the Bell Telephone Company.
- 1 current list of General Office employees with names and home addresses.
- 1 flashlight with spare batteries.
- 1,000 numbered emergency payroll checks with instructions and listings of employees authorized to countersign checks. (30,000 additional checks are on file in J&L's Security Vault at the Emergency Headquarters.)
- 1 special punch for punching employee's identification card each time a check is issued.
- A supply of pencils, envelopes, paper clips, scratch pads, maps and limited first aid supplies.

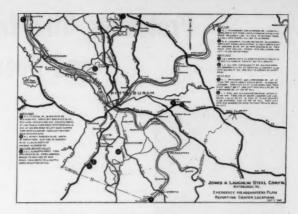
Each Vice President of the Corporation has been asked to determine the number of employees by title within his department that would be required at the Emergency Headquarters for his department to function properly under emergency conditions. This predetermined list is approximately 30% of the normal office staff and the list will be used at the Reporting Centers for determining which surviving employees will report to the Emergency Headquarters. At the time an employee is advised to report to the Emergency Headquarters, he will be issued a map showing him the route to follow.

Three employees will be assigned to each Reporting Center to carry out the responsibilities as set forth in the Emergency Headquarters Manual. These employees have been pre-selected and advised as to their assignment during an emergency. All twenty-seven of the Reporting Center personnel have been authorized by the Treasury Department to countersign the emergency payroll checks and it is believed that at least one-third of this number should be available. With the messenger service that has been provided under the Emergency Headquarters Plan, the countersigning of the emergency payroll checks would present no serious problem as long as one of the twenty-seven authorized employees survives.

Each General Office employee has been issued an identification card as a part of the Corporation's Industrial Defense Program. This card contains a photo-



A typical employee reporting center in the home of a Jones and Laughlin employee.



graph of the employee, name, address, signature, height, weight, color of hair and eyes, birth date, blood type, social security number and the name, address and telephone number of the person to notify in case of accident. This card serves several purposes. In addition to serving as identification of the employee, we believe that there is considerable merit in having the blood type and RH factor on this card. In the event of serious injury, this information would be immediately available to those rendering treatment and may help to save life. The Plan states that each surviving employee must present his identification card before receiving an emergency payroll check. At the time the check is issued, the identification card will be punched with a special punch to indicate the number of checks that have been issued to each employee.

The Primary Dependent of each employee has also been issued an identification card. This card contains the Primary Dependent's name, relationship to the employee, social security number, height, weight, color of eyes, and the signature of the dependent and the employee. In the event the employee is unable to report to one of the Emergency Reporting centers for his check due to illness or injury, his Primary Dependent may report for him by presenting both identification cards.

The Emergency Headquarters Plan provides for each General Office employee to receive four emergency payroll checks over a four-week period. The purpose of punching the employee's identification card when a check is issued is to eliminate the possibility of an employee going to more than one Reporting Center and receiving more checks than the Plan provides.

No one who has taken the trouble to examine the facts at hand can doubt the crushing destructive potential of modern weapons. But we must believe that even this gigantic force cannot be totally destructive . . . that there will be men and machines left to carry on, to salvage, to rebuild.

Our Company's program is predicated on the belief that man will survive. We believe that any and every measure of preparation we can take is justified and that should nuclear war be inflicted on mankind, survival will belong to the best prepared.

Protecting Vital Industrial Records and Documents



By R. C. Grimes

Custodian of Records

Westinghouse Electric Corporation

Pittsburgh, Pennsylvania

Mr. Grimes had several years experience with International Harvester Company and Atlantic Refining Company in Pittsburgh in various accounting positions. In 1943 he entered Westinghouse Electric Corporation in the Office of the Custodian of Records. He initiated and installed the program in many locations of the parent company and wholly-owned subsidiaries. He headed the selection committee and supervised installation of the present underground records center in September of 1956. The underground records center contains corporate records and other valuable papers, many of which have been microfilmed. He is a guest lecturer at the OCDM Staff College Course in Industry Defense and Mobilization and at numerous Industrial Survival Conferences throughout the Nation.

The foregoing articles explain the problems and solutions connected with protecting people and property in the event of a major disaster. During World War II, we had a Defense Program which was planned for hazards contemplated at that time. However, those hazards were insignificant compared to what could happen today. We won World War II, then came the period of complacency. We should think of the effort and expense involved to revive interest in Industrial Defense. This is not a scare program of short duration, this must become a way of life in order that we may continue to be Free World leaders. In order to preserve life and property, if we are to continue our way of living, our companies must preserve their memory or know-how, which is their records.

This need not involve revolutionary developments, but rather refinements or additions to present practices. Records are often considered as a necessary evil and, in some corporations, are still treated as such. However, industrial operating systems and legal requirements, particularly in recent years have somewhat altered this attitude and it has been necessary to find a method of control. This has developed Records Management, in order, to bring order out of chaos, which in turn makes information readily available and materially reduces the expense involved.

Companies have adopted various types of Records Management programs, many of which can easily be adapted to include defense measures. Ancient history records ways by which they preserved records and records have been found in underground locations. Even they practiced a form of defense in connection with records which apparently were considered of value. This indicates we, today, are not original in habilitating underground locations for storage of records.

Due to technological developments, we are now faced with the problem of protecting the proper operating records in the event of additional forms of disasters. Companies which have reasonably protected their records against normal disaster such as fire or flood, are in a position easily to incorporate the additional necessary provisions and facilities to safeguard necessary records in the event of a major disaster. Some companies have made great strides in civil and defense mobilization programs, others have read and listened to recommendations and not disagreed, but when they face the facts as to the expense involved, they continue to live in the hopes that nothing will happen. This appears to be the economic approach, but what happens to our economy if disaster strikes?

Any good program involves systematic protection and control of records from their inception to their demise, endeavoring to eliminate records as soon as possible, but keeping those which are important for necessary periods. It is apparent now that better protection must be provided for critical records, records necessary to get back into business if disaster strikes, not only on new products, but to replace, repair or revamp products presently in use. In addition some current records must receive maximum protection in order to continue business which can be accomplished by additional copy, or by microfilming. When available, underground areas are often practical for protection of records and for emergency operating centers.

Control of Records—Let us look at the centrally controlled Records Management Program of one company which has been in operation for a number of years and is continually being improved. It became apparent prior to World War II that, due to growth, more complicated legal requirements, increased quantities of records created, (partially due to improved mechanical systems) and increased Government regulations, that definite controls must be initiated to facilitate a systematic method of progressive aging and movement of records to inexpensive storage and ultimate destruction as soon as possible, but not prematurely. Simultane-

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In this former limestone mine, 205 ft. below the surface of the earth, there are 12,800 shelves containing 105,000 cartons of Westinghouse Company records. This isle is 410 ft. long.

ously, required records must be easily, quickly, and economically located.

According to the By-Laws, the responsibility for all records used to carry on business is assigned to the Controller. In order to carry out this responsibility, a Custodian of Records was appointed. The Records Management Program was started in August 1942 to be a centrally controlled program, including centralized storage of important corporate records. The systems and procedures were conceived at Headquarters and passed on to the various operations by means of written information and the installations assisted by Headquarters Staff personnel. The program was well underway in 1943 and the first Records Center, which was then called an Archives, was opened in early 1944.

As a part of the Headquarters Organization, Records Management provides systems, procedures and records storage facilities. It also provides direct assistance to new locations and all other company locations when desired. Each division or office is responsible for following standard procedures. This program includes all locations in the United States and wholly-owned subsidiary companies. At present the program and the Records Center services more than 350 locations. The plans and procedures are designed so that a continuous flow of records properly protected from normal hazards as well as emergency hazards is being realized. The flow charts are laid out so that with very little effort and time involvement, they could be changed or revised to include disaster program provisions. They already have the

facilities for such a program, therefore most of the battle is won. All of the major locations are so organized on a decentralized basis that they can operate during an emergency and, due to the microfilming program which has been in effect for many years, they would be able to get back into business in a relatively short period of time.

For many years, the people of Pittsburgh were accustomed to seeing each spring, elaborate signs on poles and other public places, stating it was time for spring clean-up. We no longer see these signs since our city has adopted a plan of continuous clean-up, completely around the calendar.



R. C. Grimes (left), Custodian of Records at Westinghouse and James Guinan, his assistant, are responsible for operation of the 42,000 sq. ft. of storage area in deep underground locations safe from enemy attack.

A similar system has been adopted insofar as records are concerned. The continuous flow of records to proper disposition is one of the results of a coordinated Records Management Program. Our endeavor is to have readily available that which needs proper protection and prompt destruction of records no longer required. The program is controlled by procedures Manuals and Flow Schedules, which is a one-line listing of all records in each location, by departments, and includes identification codes as well as the periods the records will be retained in the active, semi-active and inactive files, in addition to the total retention period. These flow schedules act as the Bible for retention, destruction and protection of records and microfilming of critical records; also, creates a constant flow of records and microfilm to destruction or to the Records Center for storage.

The Microfilming Program, Company-wide, is based on the necessity for being in a position to get back into production as soon and as economically as possible in the event of any type of disaster. This would apply to partial or complete destruction of facilities. As a result, only a minor portion of our financial records are microfilmed; however, all of the important manufacturing

information is microfilmed in each manufacturing location on a day-to-day basis. The original, or a copy of this film, is stored in our underground Records Center which provides maximum protection and is quickly available. Proper controls are maintained so the required information is easily located. In addition, particularly in the event of local disaster such as fire or flood, information necessary to resume production could be made ready by the time facilities were provided. Facilities and equipment are being continually improved which will greatly reduce the time required to replace necessary information from microfilm.

Records Center-The first Records Center was started in 1943 and in 1956 it became necessary to provide more safe, secure and economical space for this purpose. In view of the various hazards normally experienced in a heavily populated area and the war hazards with which we have been concerned, the ideal was a one-level operation with maximum safety from such hazards and maximum practical security. It became apparent the answer would be an underground location that was easily accessible. After investigating the possibilities within a reasonable distance from Pittsburgh, it became apparent a mined out limestone area would be the answer. Upon investigating such available space, we found a number of obstacles, particularly the height of the available areas. In many instances, over the road trucks cannot enter the space occupied which means an expensive and time consuming operation of unloading and reloading. We ultimately located a space not far from Pittsburgh. This place has a drivein entrance which will accommodate trucks conforming with the maximum legal height in Pennsylvania which is 131/2'.

The space which we have habilitated in this mine for storage of records and microfilm of all company activities now consists of 66,000 sq. ft. and is 205' below the surface completely enclosed from the remainder of the mine area and is serviced by means of an electric fork truck and electric scooter. The actual usable floor space, plus the space occupied by the supporting pillars of limestone, covers an over-all area of approximately 2.3 acres. A battery-powered scooter is used for the longer trips to reduce employee fatigue and increase efficiency.

The mine has a constant year-around temperature of 52 degrees. There is a constant air movement of approximately seven miles per hour and in order to heat the enclosed area, air is pumped in, heated electrically to 70 degrees with a resultant humidity of 57%. The air is moved the length of the Records Center by means of intermittent small fans and exhausted at the opposite end, thereby constantly supplying fresh air, ideal temperature and humidity conditions.

The minimum height within the Records Center is 11½' and the steel shelving on which the records are stored in standard corrugated cartons is 87" high, storing at a maximum height of 2' above the shelving.

All receipts and shipments are made by motor truck to our receiving entrance and placed on skids or pallets which are moved to place of storage or removed as the case may be with the electric fork truck, therefore the actual physical handling is kept to a minimum and as a result, not only is service on incoming and outgoing documents greatly improved, but a number of economic benefits were realized. For example, the space occupied is unobstructed since there is no lost space for elevators, stairways and pillars. Due to the improved type of space, the area required has been reduced from 95,000 sq. ft. of floor space used in the Pittsburgh locations to 66,000 sq. ft. and there is more common space in which to operate and to maneuver.

The average inventory in this Records Center consists of 40,000 rolls of microfilm, 16mm, 35mm, and 70mm; and 190,000 cartons of records. The normal annual receipts are 30,000 cartons of records and an annual destruction of approximately the same amount. The monthly receipts vary from 2500 to 4000 cartons throughout the year, the heaviest receipts are during the first three months of each year. We also average 125 requests for records per day. These requests are for information from records, single sheets of paper, bundles, folders and sometimes full cartons of records. All requests for records are sent to the office in Pittsburgh by teletype, telephone, or regular request forms, where they are checked and properly identified, then transmitted to the Records Center via teletype. The sender's copy is a single copy of a standard form designed to requirements and is automatically relayed to the Center on a three-part teletype form identical to the sender's copy. These requests are filled in the same manner as you would fill orders for material; the original receiving copy acts as a charge-out for the records, the duplicate is attached to the records sent and the triplicate is placed in the carton in lieu of the actual records. If the records are not returned promptly, the sender's copy referred to above is used as a reminder.

The microfilm is exposed by each location and processed locally or sent to the Records Center for processing. This facilitates destruction of the original records as soon as the immediate activity has ceased. Information required can be obtained by making a print from the film or by supplying a diazo aperture card.

The vault where the security microfilm, confidential and classified records are stored consists of 1700 sq. ft. of floor space with controlled heat and humidity designed for storage of such records in accordance with recommendations of the Bureau of Standards. The door to this vault is a 3-hour safe type combination door, approved by both the Department of Defense and the Atomic Energy Commission. Five of our employees are cleared with both of the above Government agencies and all procedures are in accordance with their requirements.

We are now able to render better service and operate more economically. For example, as previously men-(Continued on page 127) Min with New including ginee devel Buoy New main: Secur the O Busin

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Planning for Emergency Repair and Restoration



By A. G. Wambach
Defense Activities Engineer
American Telephone and
Telegraph Company
New York, New York

Mr. Wambach has a background of 37 years service with the American Telephone and Telegraph Company in New York. Prior to his present position, his duties have included many assignments in the Outside Plant and Engineering departments. During World War II he was development supervisor of the Expendable Radio Sono-Buoy project at the Navy Underwater Sound Laboratory at New London, Connecticut. In his present capacity he also maintains liaison on matters relating to Defense and Security with the Office of Civil and Defense Mobilization, the Office of the Assistant Secretary of Defense, and the Business and Defense Services Administration.

Discussing the Bell System plans for emergency repair and restoration is almost tantamount to describing the way of life of telephone people. In furnishing a communications service to the public, we must first of all provide the most reliable types of communications. Our customers value their service in terms of its dependability. As an obligation and trust, therefore, we recognize and prepare for man-made, natural and national emergencies. Our planning is, and has always been, geared to anticipate such emergencies as fires, floods, storms, tornadoes, earthquakes and large-scale hurricanes. It is an ancient story of "man against nature," and now and then we must repair and rebuild.

With the present threat of a possible nuclear attack, and the related radioactive fallout hazards, it has been necessary to tailor our existing emergency practices to meet the changing times. We cannot make plans and shelve them. They are constantly being revised in an attempt to meet the requirements of the future. They must be carried out in our day-to-day lives and be a part of our regular training program. A purely theoretical plan designed only to be used in an extreme emergency will not function efficiently unless practiced. It should, therefore, embody the standardization of the day-to-day training, tools, equipment, materials and practices, and the programing of supplies, as we function in our everyday lives. Systemwide standardization

of procedures is most vital in the communications industry and permits Bell people and Western Electric's installation forces to rush to any area and go to work without confusion.

It is difficult to confine this discussion to the actual Emergency Repair and Restoration of Facilities, since for these routines to work smoothly, they must encompass a consideration of the over-all planning of the industry. Almost without exception every subject covered in this special industrial survival issue of the ASIS quarterly magazine is in one way or another related to this planning.

All of the Operating Companies of the Bell System and the Western Electric Company have such plans, and together they function as one big team throughout the nation. The ability to switch circuits and the rapid repair and restoration of communication facilities during a period of emergency is one of our greatest assets in providing the most reliable service possible—when and where it is needed.

Planning for the present threat of a national emergency has been under way for many years. It includes such basic major considerations as the provision of:

By-pass routes around major cities.

New thruways for communications, which avoid target areas and connect with existing routes.

Placing and planning for world-wide transoceanic cables. Again and again the multiplicity of routes in the vast communications network and the dispersion of facilities have proved to be a major factor in maintaining continuity of service.

Part of our long-range planning for the restoration of facilities, where needed, also includes:

- Close liaison with the Office of Civil and Defense Mobilization both at the National and Regional levels. These take into account:
 - (a) Compliance with the National Plan.
 - (b) Advance preparations for the free movement of personnel, vehicles and supplies wherever they are needed.
 - (c) Basic reliance on the communications common carriers, skilled and experienced in day-to-day minor emergencies, ready to do the job, and do it well, in major emergencies.
- Close liaison with State and local civil defense organizations so as to provide for an understanding of our mutual problems at the local level.
- 3. First Aid training.
- 4. Training in protection against radioactive fallout.
- A study of the shelter area capabilities for the protection of personnel during the period of a warning.



Units of Portable Radio Relay Towers with Emergency Equipment are stored around the country outside of target areas ready for emergency use.

6. The protection of personnel, plant and service.

Hence we see that continuity of service and restoration planning are very closely related and complement each other.

Most emergency repair and restoration work is administered in our daily work through regular channels of organization in each of the operating companies. In emergencies such as hurricanes which may involve large sections of the eastern seaboard, these local emergency operating centers are tied in with a plant and traffic emergency operating unit at the A.T.&T. Company headquarters in New York, where officials begin to chart a storm's erratic path and alert people to stand by for emergency calls.

During a national emergency the local operating companies are prepared to operate from relocation sites where necessary. These will be connected to the Long Lines operating divisions which will in turn report to the National Bell System Damage Assessment Center. This is a hardened underground facility located some distance outside of the New York Area. This is the focal point of the communications network, where communication plans in a national emergency will be administered, and liaison with the government will be established.

"Ahead of Trouble" is important to such planning. Our Western Electric manufacturing plants and distributing houses are dispersed across the nation to the extent practicable. They are strategically located, and many maintain reserve supplies of such items as open wire, cable, drop wire. Blueprints of every Bell System

installation in the United States are maintained by Western Electric. W.E. programing engineers, distributing house personnel, purchasing and traffic people and installation forces are ready to spring into action when needed. When disaster appears imminent, distribution people start checking reserve stocks and readying them for immediate delivery; supplies already in the supply pipeline can often be redirected to the area of greatest need; purchasing people alert the Company's suppliers to expect rush orders; traffic people notify rail, truck and airlines that emergency service is about to be needed; and often before we have felt the real impact of a disaster, truckloads of equipment head for the threatened area. In other words, the role of Western Electric as the manufacturing and supply organization of the Bell System is to bring their special experience and capabilities to the aid of the telephone people, with whom they work hand in hand, with a speed born of long experience in emergencies.

Designing and constructing substantial buildings to house equipment and personnel, the inclusion of emergency power generators, placing tape-armored buried cables, underground plant, storm proofing overhead plant, and most recently the proposed transcontinental hardened coaxial underground cable route are all part of advance planning. To minimize service interruptions Bell Telephone Laboratories scientists, physicists, chemists and engineers combine their ingenuity to develop stable equipment and to determine the most durable materials and design.

Outside Plant protection programs are designed to resist service interruptions and expedite repairs and restoration. Important rights-of-way are maintained free of obstructions and clear for accessibility. Cables gain the additional protection of being underground. Many are filled with gas under pressure to help keep out moisture and to provide a means of detecting troubles in sheaths before service is affected. New and improved polyethylene-insulated conductors are a most recent improvement in cable design to reduce troubles. Construction trucks, splicing cars and trailers, and installation-repair vehicles are practically standard in the System, and constitute the largest motor vehicle fleet in the country.

Central Office design, operation and maintenance are very important to the reliability of service. Large storage batteries feeding the equipment and normally floating on the power supply can maintain the office for several hours. Emergency power plants, both permanently installed and portable, insure a constant source of power—the life blood of telephone equipment. Complex switching systems of the network test circuits automatically and help analyze their own troubles. Carrier systems are designed to measure their own performance and compensate for normal variations. Alarms to signal impending failures and testing provision are integral features of most central office equipment. "Patching" facilities to maintain continuous service by rerouting,

(Continued on page 149)

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Dispersal of Industrial Plants



By Victor Roterus

Director, Office of Area Development
Business and Defense
Services Administration

U. S. Department of Commerce
Washington, D. C.

Mr. Roterus had had many years of experience in urban planning and industrial and regional development. Before entering the Department of Commerce, he was with the University of Michigan as Resident Director of the University's Social Science Research Project. Previously, he was Chief of the Research Section of the Cincinnati City Planning Commission, where he prepared the basic reports on the economy and other aspects of the Cincinnati metropolitan area. He has served with the War Production Board, the National Resources Planning Board, and the Tennessee Valley Authority. He has received the Meritorious Contribution Award of the Association of American Geographers, and a certificate of merit and citation of the National Civil Service League. He is a member of the Committee on Urban Research of the Highway Research Board, National Academy of Sciences and serves as Consulting Professor at the University of Maryland.

In this "atomic" or "nuclear" age, the security factor in plant location is a relatively new factor which is receiving increasing attention by industry. A number of national companies, for example, regularly make Washington a point of call simply to check contemplated locations with reference to the security factor. The Government's National Industrial Dispersion Policy has been designed to encourage manufacturers to find adequately dispersed sites which will still meet the requirements of an economic location.

The objective of the Dispersion Program is the reduction of industrial vulnerability through the use of space. It is designed to encourage a wider distribution of new defense production facilities so as to minimize the disruption of production in the event of enemy attack.

Location within or too close to three types of potential targets is discouraged: (1) an existing major concentration of industry, (2) an existing major concentration of population, and (3) a highly strategic or critical defense facility. In effect, the Program simply provides additional impetus to the present trend of industry to select locations in the uncrowded parts of the metropolitan areas at some distance removed from the industrial concentrations of the central core city. Such locations in the more ample sites available in the

metropolitan outskirts, as management experts well know, permit the utilization of horizontal-line assembly methods in expansive one-story buildings; they provide room for cafeterias, recreation space and future expansion; allow for off-street parking and loading; and generally provide faster and more convenient transportation. bool

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The Office of Area Development of the U.S. Department of Commerce is assigned the responsibility (by Defense Mobilization Order I-19, dated January 11, 1956) for counseling industry, government, and the public in the application of the dispersion policy. The office helps a manufacturer to find those sites offering the greatest degree of relative security within the area he has selected for a new plant. Accordingly, if a manufacturer wants to locate in the New York metropolitan area, for example, the job of the Office of Area Development is to indicate generally where in the New York Metropolitan Area he can find sites best meeting security requirements. Since the Government is not prepared to subsidize an uneconomic location, often the final site selected by the manufacturer must sacrifice some degree of security in order to meet requirements of economic operation.

Dispersion does not mean relocation, nor does it mean decentralization. The dispersion program has as its objective the dispersion of new and expanding industry, not the movement of existing industry from one place to another. One of the basic tenets of the program is that no region of the country is to be built up at the expense of another. Further, adequate dispersion normally can be effected within local marketing areas—cities need not fear the loss of industry to their market areas through the operation of the program.

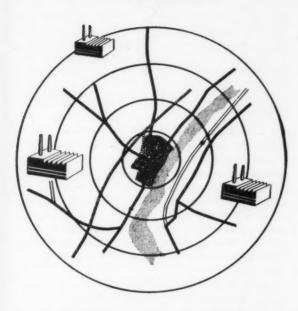
In assessing a site for its relative vulnerability, a number of factors must be considered. First of all, if the site is not in or near a major urban target area of population or industry (the criteria are such that areas only in some 50 of our major cities qualify as targets; see accompanying map), a strategic military installation, or a key industrial facility, it automatically would be considered adequately dispersed. If the site is near one of these target areas, the relative distance from the target area which is judged to have a high degree of relative safety from blast and thermal effects of hydrogen bombs is determined by considering a number of factors. These include size and physical characteristics of the target area, the size of the weapon likely to be used for such a target, and physical characteristics of the proposed facility (see accompanying chart). These are then weighed against economic factors to get the most secure location which still meets economic considerations. It should be noted that this procedure differs considerably from the original dispersion policy which required that all new facilities be located 10 miles from the target areas and which Mr. Yaseen, in his

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book Plant Location, characterized as an "unrealistic formula."

The assessment of particular sites for dispersion adequacy is made on a case-by-case basis at the Washington level (see inset for simple procedure). The Office

Two Easy Steps



HOW TO GET A DETERMINATION ON THE DISPERSION VALUES OF PROPOSED PLANT SITES WITH RESPECT TO:

- Population and Industry Concentrations
- •Key Industrial Facilities
- •Major Military Installations
- INDICATE proposed site or sites on map (ordinary road map will suffice).
- II. SEND marked map to:

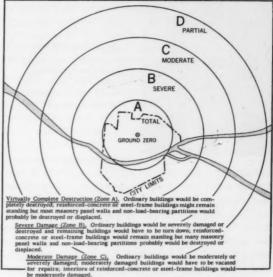
Industrial Location Division Office of Area Development U. S. Department of Commerce Washington 25, D. C.

of Area Development reviews the site for its location relative to population and industrial concentrations determined to be probable urban targets, and then secures an official opinion from the Department of Defense with reference to the adequacy of the site in relation to its distance from military installations and facilities judged by that Department to be in the strategic or critically important categories.

The results of these checks provide a manufacturer with an official opinion on the dispersion status of a

proposed site, and ordinarily no further consultation with the Government on the security factor will be necessary.

ZONES OF RELATIVE VULNERABILITY
IN AND NEAR A HYPOTHETICAL TARGET CITY



Partial Damage (Zone D). Ordinary buildings would be partially damaged but would not require vacating during repairs; interiors or reinforced-concrete or steel-frame buildings would be slightly damaged.

The incentives available for use by the Federal Government for this program are limited and accordingly, primary reliance has been placed upon information and education to achieve the objectives of the program and to encourage industrial executives to consider security—his own and the Nation's—in making plant location decisions. To a limited extent, the information approach has been supplemented by the use of rapid tax amortization incentives and considerations of military procurement. However, the statutory authority for the tax amortization program expired at the end of December, 1959, so applications by manufacturers for rapid amortization of defense facilities can no longer be certified by the Office of Civil and Defense Mobilization.

As indicated in Progress Report No. 43 (June 1959), submitted to the Joint Committee on Defense Production by the Director of the Office of Civil and Defense Mobilization, "the Government's efforts to encourage dispersion, coupled with normal economic forces, have resulted in the erection of new production capacity outside of probable target areas. In addition, the increase in U. S. industrial capacity during recent years has been extensive, and has included facilities for a great variety of end items, components, production and transportation equipment, and materials. This extensive and diverse capacity has reduced U. S. dependency on single plants for important components of production, and has increased the probability that at least one or more sources of production of important items will survive a heavy nuclear attack."

Assessment and Reporting of Damage Following an Attack



By H. Burke Horton

Executive Assistant to Vice-President
and General Manager

Remington Rand Univac Division

Sperry Rand Corporation

Stamford, Connecticut

Mr. Horton is the founder and first Director of the National Damage Assessment Center, ODM and OCDM, 1954-1958, and in 1959 served as Director of the OCDM Operations Research Office immediately prior to joining Sperry Rand. He served as Aerologist in the Pacific Theatre during World War II; Transport Analyst and Statistician with ICC, 1946-50; and Chief, Interindustry Research Office, Headquarters, USAF, 1950-1953. He holds the degrees of B.B.A. and M.B.A. from the University of Texas.

Introduction—International events since World War II have demonstrated on several occasions, the importance of "preparing for the worst" while "hoping for the best." In the nuclear age, "preparing for the worst" is a very formidable task. In previous wars, military victory automatically guaranteed survival. This automatic guarantee no longer holds true. The level of destruction that would result from a nuclear attack is likely to be so great that survival and recovery must be based upon advanced preparations and planning which parallel the military strategy of the Nation.

Background—As nuclear weapons were tested by a potential enemy during the late 1940's and early 1950's, it became apparent that the resources of the Continental U. S. had lost their immunity to heavy attack. In order to cope with this unprecedented threat, more insight into the nature of this new problem became a necessity. In 1954 the U.S. Government, under the guidance of the Office of Defense Mobilization, initiated the National Damage Assessment Program. The first task undertaken within the framework of this new program was the development of procedures for realistically simulating the effects of nuclear attack on the U.S. This first task was accompanied by assembling a vast library of U. S. resources-military bases, census tracts, manufacturing plants, electric power generating stations, bridges, tunnels, port facilities, hospitals, freightyards, land, and livestock-classified by type of resource, and accurately pin-pointed in terms of a general coordinate system. In this effort the Office of Defense Mobilization and the Federal Civil Defense Administration (now merged to form the Office of Civil and Defense Mobilization) were ably assisted by the Department of Defense and other participating departments and agencies.

Tables of weapons effects, radiological fallout patterns, upper wind data, fire-spread data, the estimated shielding provided by typical U. S. structures, and the estimated vulnerability of personnel, structures, and livestock were also stored in compact form. Electronic computers were acquired and complex sets of computer

instructions were developed, tested, and "de-bugged" to permit the rapid preparation of estimates of resource losses and resources surviving for any particular attack pattern, whether hypothetical or real. Gaming procedures were developed to achieve realism in these studies of the effects of nuclear attack on U. S. resources. These data and techniques, and this equipment, have now been used as a basis for the running and making detailed analyses of many dozens of nuclear attacks against the U. S.

Hundreds of attacks have been run for study of particular effects, such as the mapping of fallout and blast intensity contours throughout the Nation, and the intensive analysis of lives saved by various grades of shelter programs.

As in any new field of research, much remains to be done; nevertheless, a great deal has already been learned about the probable effects of a wide variety of possible nuclear attacks against the U. S. This area, preattack study of the problem, has now reached a fairly high level of maturity and sophistication. Intensive parallel work by the Department of Defense and its contractors has yielded a deep insight into the military aspects of nuclear war.

Operational Damage Assessment—From the outset the National Damage Assessment Program has included a National Damage Assessment Center to compute, estimate, and analyze the status of surviving resources in the event of an actual attack. Because of the high degree of overlap of functions, personnel, and equipment, the National Damage Assessment Center (NDAC), for an actual postattack operational situation, is the same facility that was developed for the preattack studies described above.

NDAC is now beginning to develop enhanced capabilities for handling exceedingly difficult postattack problems. The two areas of work, *pre* and *postattack*, have many similarities, but there are also many differences. For example, the postattack problem requires a continuous surveillance system to provide accurate

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location (ground zeros) of nuclear bursts, and their estimated yields. This difficult problem is now in the course of being solved. Details are omitted for security reasons.

In an actual attack situation, the early computer estimates (based upon ground zeros, yields, and tables of weapons effects) should be superseded by more accurate data as rapidly as possible. Sources for improved estimates of the condition of resources include aerial reconnaissance, radiation measurements, objective-type facility surveys, and a postattack population census taken by sampling. Some of this improved information (e.g., aerial photographs) might become available within a few days, depending on the course of the nuclear exchange. However, much of these additional data, including the extremely important population sample, would not be available for many weeks or even months. As the improved information became available, the same electronic computer that calculated initial damage estimates would be used as a large, highly-efficient, record-keeping machine for posting the improved data. Decisions bearing on national survival and recovery that could not possibly await final tabulations of surviving resources would, of necessity, be based upon the best information available at the time the decisions were

As an aid to rapid reference and use of the resource information, results are stored on modern mass-storage drums, ready to be called up in seconds for display on the faces of several large electronic display tubes. This method of calling up records bypasses the awkward chores of printing, filing, and referencing tons of constantly-changing resource records. Maps, charts, and tables can be made available to high-level officials in seconds.

Dissemination of large portions of the resource data to important departments and agencies, and to selected OCDM regional headquarters, will be made by tested and proven magnetic tape equipment designed to transmit several hundred characters per second over standard voice telephone circuits. This relatively low transmission rate was chosen to permit operation over improvised voice circuits in order to bypass the numerous line breaks that would occur in an actual attack. The transmission rate is low only by computer standards; it is 25 to 50 times as fast as standard teletype.

To aid isolated regions, States, cities, or Government agencies in making damage estimates, without access to NDAC, casualty and housing damage contour maps are being prepared for decentralized use. A set of maps is being prepared for each large U. S. city. The percentage casualty and housing loss contours on these maps are based upon dozens of different ground zeros and weapon yields and the machine-computed losses associated with each hypothetical detonation. By investing several thousand hours of computer time in advance, each local analyst can be equipped to do a rapid and efficient job of hand damage assessment, based upon ground zeros and yields. A classified decoding

key and simple interpolation take the place of timeconsuming dot counting or desk calculator work.

Resource Management—New procedures now under development by OCDM contractors will permit the NDAC computer and resource library to be brought to bear on the massive resource management problems associated with survival and recovery. The new techniques are flexibly designed to permit frequent human intervention in the overall procedure whenever unanticipated difficulties arise. Such difficulties are normal in attempting to fulfill requirements with depleted resources. Intervention is necessary in such a complex situation in order to provide realistically for such things as revision of priorities, reallocation of human and material resources, initiation of expedited decontamination and salvage activities, and cannibalization of unneeded resources.

Industrial Preparation for Survival—The objectives of the National Damage Assessment Program are vital to survival and recovery of the Nation. The Program is designed to provide a major source of information to surviving governmental officials who will inherit the awesome responsibilities of a modern nation in extremes. The Program has already furnished important information on how industry can improve its posture for emergencies. Some of the most important contributions that can be made by industry are (1) provision of emergency fallout shelters for employees and their families, covering a period up to two weeks,* (2) preparation of personnel rosters, emergency lines of succession, operating procedures, product blueprints, bills of materials, and other important production records, and (3) storage of all such information in compact form in a fire-proof vault or cabinet at each plant site. with duplicate records stored at a safer location.**

In addition to the special preparations mentioned above, care in the preparation of normal reports to Federal statistical agencies will pay important dividends in preparedness. When the bombs start falling, there will be little time to revise or to correct a careless statistical report. The critical governmental decisions of the first few weeks will be based upon information already in hand. The data collected regularly by the Department of Commerce, the Department of Labor, and other authorized data-collecting agencies of Government are regularly processed to provide the basic records of the National Damage Assessment Center. In an attack situation, these records, which have been supplemented by accurate location coordinates, will be compared with reported ground zeros, weapon yields,

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^{*} Heavy industrial buildings normally offer better shielding than private residences. OCDM can provide literature and data on the shielding characteristics of various types of construction common throughout the U. S.

^{**} Further details are available from Business and Defense Services Administration, Washington 25, D. C., and from the Industry Office, Office of Civil and Defense Mobilization, Battle Creek, Michigan.

The Corporate and Plant Disaster Plan Manuals



By L. F. Metz

Plant Emergency Administrator

Flight Propulsion Division

General Electric Company

Cincinnati, Ohio

Mr. Metz joined the General Electric Company in 1951. His work, with the exception of one year, was with the Plant Security organization, as training officer of the Plant Fire Patrol, later succeeding to his present position as Plant Emergency Administrator. He is very active in local, State and Federal programs for industrial defense. He serves as a regional vice-president of the National Institute for Disaster Mobilization and is a member of the Cincinnati Chapter of ASIS. He is a guest lecturer at the OCDM Staff College Course in Industry Defense and Mobilization and most recently was chairman of the Fourth Annual National Industrial Mutual Aid Conference.

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Have you put your disaster plan in writing? If not,—why not? If so, is it written as a collection of disconnected statements, or is it contained in a well-organized manual? If a manual has been prepared—does it adequately describe your emergency and disaster plans? Does it contain enough information or too much? Is it simple, easy to read and understand? Has a series of manuals been issued, or has only one manual been issued with the subjects covered in appropriate chapter headings? Does the emergency manual fit in with the regular administrative issuance system of the company? Is the disaster plan manual easily identified by color or size? These are only a few of the questions which every emergency planner must answer in documenting the company or plant emergency and disaster plans.

Many times, in industrial defense conferences and seminars throughout the country, I have heard the expression, "Most industrial disaster plans are not worth the paper they are written on!" Their point, of course, is that in an emergency there is no time to look for the manual and then try to determine what action to take. The manual is only a record of the plan and a guide to emergency action. Much training is necessary to assure that action will be proper and automatic when emergency occurs.

It is of vital importance, however, that the corporate and plant emergency and civil defense plans be put in writing. Manuals should be prepared by the Plant Emergency Administrator, with the assistance of an Emergency Planning Advisory Committee. The manual should contain statements of company policy regarding civil defense and emergency planning, a description of warning and emergency communication procedures, the nature and responsibility of each plant protective service, shelter locations, evacuation routes, emergency equipment, and similar information.

Late last year we decided to revise our plant emergency manual. We visited the OCDM Industry Office in Battle Creek and studied the large number of company disaster plan manuals which they maintain for reference and use by industrial executives. On the basis of this research, I prepared a list of typical subjects which were found in the manuals of other companies. I noted the format, subject-matter arrangement, nature and extent of descriptive materials included, method of binding, color identifications, methods of coding and indexing, and distribution which had been made within the plant or company.

Perhaps the information I obtained will be useful to you in developing your own company disaster plan manual. The following is a comprehensive list of subjects which, in general, can be used as a guide and which seem to fit the needs of every plant regardless of size.

OUTLINE OF SUBJECTS FOR A DISASTER PLAN MANUAL

- Company policy statement regarding civil defense planning.
- 2. The purpose of the plan.
- 3. Authority for the plan.
- 4. Types of disasters expected.
- 5. Physical layout—maps, blueprints.
- 6. Data on adjacent areas
- 7. Assessment of vulnerability to enemy attack.
- Relationships with local government, including civil defense authorities.
- Relationships with disaster and welfare agencies, including American Red Cross.
- 10. Principles observed in disaster planning.
- 11. A message from management to members of the civil defense emergency organization.
- A message from management to all employees, emphasizing individual responsibility.
- 13. Name of the plant civil defense coordinator and deputy.
- 14. Names of civil defense advisory committee members.
- 15. Organization chart.
- 16. The plant warning system:
 - (a) Receipt of warning.
 - (b) Warning to employees.

- 17. The plant control center:
 - (a) Location.
 - (b) Equipment.
 - (c) Operation.
- 18. The plant communications system:
 - (a) Internal.
 - (b) External.
- 19. Emergency shut-down procedures.
- 20. Emergency evacuation routes, including directional signs from the workplace to outside of building.
- 21. Evacuation routes from the plant to outside the city or to reception and mass care centers.
- 22. Shelters for employees:
- (a) Reentry time.
- 23. Location of shelters, including floor markings and directional signs from workplace to shelter.
- 24. Location of hazardous areas which should be avoided in going to shelter.
- 25. Care of visitors during emergencies.
- 26. Organization and composition of self-help or protective groups:
 - (a) Fire.
 - (b) Police:
 - (1) Weapons, (2) Apprehension and restraint, (3) Traffic
 - (c) Rescue.
 - (d) Medical and first aid:
 - (1) Location of first aid stations.
 - (e) Chemical and biological defense.
 - (f) Radiological monitoring.
 - (g) Warden.
 - (h) Welfare:
 - (1) Housing, (2) Clothing, (3) Financial assistance, (4) Transportation, (5) Counseling.
 - (i) Reconnaissance parties.
 - (j) Reporting damage.
 - (k) Disaster equipment.
 - (l) Uniforms and helmets.
 - (m) Disaster Corps identification.
- 27. Protective Construction.
- 28. Protection of equipment and machinery.
- 29. Deployment Plans and Procedures.
- 30. Measures for prevention of sabotage and espionage:
 - (a) Physical security:
 - (1) Critical area protection.
 - (b) Investigation of applicants and employees.
 - (c) Safeguarding classified information.
 - (d) Employee responsibilities.
- 31. Protection from delayed or unconventional weapons effects.
- 32. Participation in industrial mutual aid associations for emergencies:
 - (a) Membership.
 - (b) Personnel.
 - (c) Equipment.
- 33. Plan for continuity of management.
- 34. Amendments to bylaws and administrative regulations.
- 35. Alternative company headquarters in emergencies:
 - (a) Location.
 - (b) Operation.
- 36. Employee reporting centers.
- 37. Recall of personnel.
- 38. Registration of personnel.
- 39. Rotation of personnel.
- 40. Personnel utilization.
- 41. Inventories of employee secondary skills.
- 42. Plan for protection of vital records and documents:
 - (a) Duplication method.
 - (b) Storage location.

- 43. Emergency financial procedures.
- 44. Emergency repair and restoration of plants and equipment:
 - (a) Alternate sites.
 - (b) Alternate sources of supply.
 - (c) Stockpiles.
 - (d) Alternate production methods.
 - (e) Sub-contracting.
- 45. Utilities repair and restoration:
 - (a) Gas.
 - (b) Sewage.

 - (c) Fuel.
 - (d) Water.
 - (e) Electric.
 - (f) Communications.
- 46. Policy on deconcentration and dispersion of production.
- 47. Methods of informing employees about the company dis-
- 48. Disaster plan testing and exercises, including Operation Alert and Civil Defense Day.
- 49. Program for informing and educating employees in civil defense preparedness at home.
- 50. Policy regarding utilization of employee publications and organizations to inform and encourage employees in disaster preparedness.
- 51. Policy for informing stockholders and the general public regarding company civil defense and emergency plans.
- 52. General support and assistance to local government in community survival planning efforts.

Now, I realize that this is a rather comprehensive list of subjects; however, it cannot be considered to be allinclusive, since the needs of one type of plant may vary extensively with other types. I am sure, however, you will find it useful, as I did, as a guide in providing ideas to you and your personnel in preparation of an emergency plan manual which will adequately cover the needs of your emergency and disaster control plan.

Some companies have made their disaster plan manual distinctive by using a special color for the cover, or a size different from the usual company manuals. Several companies have used bright red or yellow covers for their disaster manuals to conform to similar colors used for helmets or other emergency equipment.

Most of the manuals which I have reviewed contained procedural information for dealing with all types of emergencies such as fire and explosion, sabotage and espionage, enemy attack, hurricanes, tornadoes, floods, snow storms, rain storms, strikes, or riot.

All companies, regardless of size, have developed some system for developing and issuing policies, regulations, instructions, and procedures pertaining to the conduct of their business. Such administrative systems vary from brief statements or letters signed by the head of the company to elaborate coded manuals consisting of many volumes. The kind of system used is of necessity tailored to fit the needs of the individual company. So it is with emergency and disaster plans and procedures. The manuals and other emergency plans issued should be tailored to fit the over-all administrative system of the company.

The geographic location of your plant may not indicate planning for extreme weather conditions. However, one severe rainstorm, a flood, or an extraordinary

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Industry Defense Preparedness Pays Off in Peacetime Emergencies



By John H. Redmond Assistant Vice President and Manager of Operations Koppers Company, Inc. Pittsburgh, Pennsylvania

Mr. Redmond has been with Koppers Company, Inc., since April 1948. He is a graduate of Ohio State University in Mechanical Engineering and the Advanced Management Program of the Graduate School of Business Administration, Harvard University. His industrial experience has included assignments in both line and staff capacities in

safety; industrial defense and security planning; quality control; cost analysis and control; mechanical, industrial, and chemical engineering; operations; and organization and direction of wide-spread multi-plant industrial activities while associated with the Westinghouse Electric Corporation, the Armstrong Cork Company, and his present company, Koppers Company, Inc. From 1940 to 1946 he served in the Ordnance Department of the U.S. Army and upon discharge he accepted a commission as Colonel in the Ordnance Corps, U. S. Army Reserve, in which he is still active. He is a Director of the Western Pennsylvania Safety Council; a Director of the National Fire Protection Association; and Chairman of the National Affairs Committee, Pittsburgh Chamber of Commerce. He has served as a Safety Consultant to the Department of Labor and Industry, Commonwealth of Pennsylvania; and a Consultant on Industrial defense and security planning to the U. S. Department of Commerce. A member of the Council of the National Planning Association, he is active in the consideration of current national problems, serving most recently as a member of the NPA Special Committee on Non-military Defense Planning.

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At 11:35 p.m., Friday, January 30, 1959, a fire occurred in the process tank farm area located in the heart of our Follansbee, West Virginia plant. This is the largest plant of the Tar Products Division, Koppers Company, Inc.

We could have lost the entire plant and the lives of many employees. But, because of our efforts in Industry Defense Planning we are still in business.

Total employment in this plant is approximately 300 employees. Thirty-five employees were in the plant when the fire occurred. All employees were evacuated safely. There were no injuries or fatalities.

The plant processes coal tar from coke ovens into coal tar and coal tar chemical products in processes involving operation under both vacuum and pressure at temperatures up to 750°. Worth of the property, production facilities, inventory, and operating and maintenance supplies making up this plant is approximately twenty million dollars. Property damage, inventory loss, and use and occupancy loss was one and one-quarter million dollars.

Eighteen outside fire companies responded to the alarm. These eighteen companies, plus our plant industrial fire brigade, quickly went into action, contained the fire in the area in which it started, and brought it under complete control by 1:25 a.m., Saturday, January 31. About one hour later there was a recurrence of fire in one of the tanks in the fire area. This was quickly extinguished. Our plant industrial fire brigade and the

fire company from Follansbee, West Virginia, remained on duty with hoses connected until daylight as a precautionary measure.

In a large measure the holding of the inventory loss to such a comparatively low level was due to the effective functioning of the fire fighting equipment and procedures which had been built into the plant over recent years, and the prompt and effective action of our plant industrial fire brigade and the outside fire companies in containing and extinguishing the fire.

The effectiveness of fire fighting equipment and control procedures also were a large factor in limiting property loss. No major items of production equipment were lost. Physical damage was largely limited to walls of buildings in and around the fire area, process tankage, process piping, electrical wiring, and foundations.

Salvage, repair, and rehabilitation were begun promptly. The Manager of Operations, Follansbee Group Manager, Division Manager of Engineering, and the Division Maintenance Engineer arrived from Pittsburgh at 2:15 a.m. Saturday, January 31. The damaged area was surveyed with the Plant Superintendent and other key personnel of the plant organization. Decision as to what was to be done was promptly made and action started to augment the plant maintenance force with outside contractors. The first of the outside contractors arrived at the Plant shortly after 7 a.m. Saturday, January 31, and reconstruction began. Effectiveness in salvage and repair of damaged equipment

greatly reduced the cost of rehabilitating equipment and repairing damage and making the plant operable again. Approximately 80% of the operations were operating effectively by 7 a.m. Monday, February 2. The entire plant was in effective operation by Wednesday, February 11, eleven days after the fire. This does not mean that all damage was repaired. Many units were operating with temporary process pipe connections, but all operations were underway without compromising either effectiveness or safety.

The restoration of the plant to production so quickly drastically reduced the use and occupancy loss.

From inspection of the fire area and the equipment located therein, it appears that the fire originated in this manner:

- A. A process tank was receiving bottom of column oil from a column at a temperature of approximately 325°F. This tank was 60,000 gallon capacity. Just prior to the fire (measurement at 10:30 p.m.) it was reported as containing approximately 45,000 gallons of material. This tank developed pressure and heaved, lifting the tank roof in two places, and spraying out approximately 33,000 gallons of hot oil across the entire width of the plant. This tank was located approximately in the center of the plant, halfway between the Ohio River on one side and the coal storage bunkers of our nearest industrial neighbor on the other side.
- B. The ignition point was either the stack of a Dowtherm unit, or an electrical circuit broken when the tank heaved.
- C. Upon ignition, the oil heaved out over the area flashed back over the entire area, with the flash back flame igniting a second storage tank causing it to explode and blow off its roof. This tank had little material in it, as practically all material normally stored in it had been fed into process.

The fire burned quite fiercely in the entire area covered by the oil heave. No tanks ruptured. The roofs on a total of 11 tanks lifted. Feed into the area from process lines was cut off by closing valves. However, the heat intensity from the fire was so great that there was considerable damage to electrical wiring in areas where there was no fire, as the temperatures were high enough from the tremendous heat to char and destroy insulation.

The intensity of heat in the fire area was so great that it melted the pipe line supports and caused the pipe lines to sag.

Certain steps taken over the last several years were particularly helpful in quickly containing and extinguishing the fire:

- Improvements in Water Supply for Fire Fighting and Operations.
 - (a) In recent years a one million gallon tank had been placed in water storage service replacing several smaller tanks.

- (b) A barge pumping station had been installed on the Ohio River. This augmented other water sources available to the plant.
- (c) A gasoline driven fire pump had been installed to assure adequate pressure on the fire protection water system.
- (d) Improvements had been made in the fire protection water system by such measures as increasing pipe sizes, extending lines to areas not previously covered, and providing better perimeter coverage of the plant process, operating, and storage areas.
- (e) The tying-in of the Follansbee fire protection water system with the water system of our nearest industrial neighbor. The valve establishing this connection was opened promptly by the supervisor on duty at the time of the fire. His alertness in taking this prompt action resulted in more than adequate water supplies to all hoses throughout the duration of the fire. Our million gallon water storage tank was running over the top during and at the end of the fire.
- Three foam hydrants had been installed near plant process areas.
- 3. A new roadway to provide a completely independent entrance to our plant. This independent roadway and entrance made it easy for all hose companies and ambulances to get promptly into our plant area without confusion or delay. This road was installed at a cost of approximately \$150,000. It paid a most liberal dividend in providing prompt entrance to outside help at the time of this fire.
- 4. The installation of the foam-fog system in the chemical distillation area provided prompt and adequate protection to the distillation unit, its process tankage, and much of the other tankage in this area. This installation was a great factor in limiting damage so that production could be resumed so quickly, and was a great assistance to the fire companies in so quickly containing and extinguishing the fire.
- 5. The extensive use of insulation on tanks and piping was a great factor in limiting damage and preventing tank rupture. It is believed this is the largest single factor accounting for the fact that no tanks ruptured to spill out their contents into the fire area and provide further fuel for the fire.
- 6. Every past action taken to relocate tankage from this process area to other areas provided easy access for the fire companies in approaching and containing the fire. The three roadways, one on each side and one through the middle of the plant, and the cross aisleways which had been cleared over recent years by relocating tankage and equipment, made it possible for the fire companies to form a ring around the fire, contain it, and move

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Assistance from Industry to Local Government in Preattack Planning



By L. W. McPherson Civil Defense Director Atlantic Steel Company Atlanta, Georgia

Mr. McPherson has been with Atlantic Steel Company for over 24 years. He is a long-time member of the Advisory Committee to the Director of the Atlanta Metropolitan Area Civil Defense, and is Chairman of the Industry Defense Committee of the A.M.A.C.D. He is an active leader in numerous civic and fraternal organizations. He has served as Plans and Training Officer of the Georgia State Guard, Artillery Officer for the Georgia National Guard, and was an Anti-Aircraft Officer in World War II.

What is local government's biggest problem in Civil Defense? Civil Defense has as many problems as it has subjects and individuals with which it deals. Each subject and each individual presents a different problem—add them all up and you have Civil Defense at any level—City, State, Regional or Federal. And the most practical approach to such a problem is to get everyone to thinking and working at it.

Public apathy gives rise to local government's toughest job. The obvious solution is to make all persons aware of Civil Defense to such an extent they will realize its importance and want to do something for themselves and others. Industry, through its Civil Defense efforts, can assist local government in awakening the apathetic public into thinking and working for itself. Employees not only look to their employers for their welfare at work but also at home. The employee and his entire family are very much interested in his employer's opinions. He depends on management's judgment in evaluating big issues, and feels that management will be reliably informed of any situation serious enough to become alarming. Employees feel that management will start a Civil Defense program when it is necessary, but as long as nothing is done there is little to worry about. The employer sets the pattern of thinking of his employees whether he wishes to or not. They look to him, they rely on him-and why shouldn't it be so? All of our major civic projects and drives, such as Red Cross, Community Chest, Civic

Improvements and Relief drives for major disasters are successfully conducted by business and industrial leaders. These leaders have established in the minds of the people their interest in the welfare of their employees. That is as it should be, and with that confidence goes responsibility. That responsibility cannot be denied or ignored, and I'm sure our industrial leaders will also be the leaders in awakening their employees to the need of Civil Defense. Before Atlantic Steel started its Civil Defense program, there was little enthusiasm about Civil Defense. It didn't seem to be important and there just wasn't time for it. Management appointed a committee to make a survey and submit recommendations. In the beginning these committee members were something less than enthusiastic but they had a job to do and the more they worked at it the more interested they became. Now Atlantic Steel has an excellent Civil Defense program, and the employees ar beginning to think about Civil Defense. They have carried their thinking home and their families are beginning to think Civil Defense and are spreading it to their friends. This is chain reaction in thinking. By starting with one small committee and "selling" approximately 1600 employees, their families and friends, is just one way Atlantic Steel has asisted local government in Civil Defense.

The magnitude of the job may cause some to hesitate before such an undertaking. Sure it's a big job, but who is better qualified than those who are experienced in doing big jobs? Industrial Management, with all its supervisory know-how and those who assist management in planning and running industry. Most of them are safety-minded and have been practicing and teaching safety for years. They realize its importance, and Civil Defense is only expanding safety. It is a natural line of thinking that fits right into the supervisor's repertoire of instructions to his employees.

It's a big job but if Industrial Management could be bluffed out because of a big job, we would not today have a nation of the greatest industries in the world. Industry thrives on doing big jobs well. Just because a job is big, it by no means is an impossible one. Suppose our doctors had given up on the big job of finding preventatives, treatment and cures of the many diseases we have today—that was and still is a big job. They haven't licked it but look at the progress they have made and look at the progress they are making. They are still working at it more than ever. That is what industry can do in Civil Defense.

When Atlantic Steel Company's Civil Defense Committee Members first met and heard what was expected of them, they were not overjoyed, but when the big job

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was broken down into the several smaller jobs and each was assigned to his part and given the literature furnished by the Atlanta Metropolitan Area of Civil Defense, he found that the job no longer seemed such a task. The more they worked at it the more interested they became. It took a lot of time, in fact several months, due to their carrying on their regular work and that of Civil Defense at the same time. Yes, it took time but they got the job done: that is, the first part of it. Civil Defense isn't something you can finish—it is something that must be carried on.

Cost is one of the most important items, and management must continually be on the alert not to exceed that which can be afforded. Plant dispersal is suggested so that industry will not be so concentrated that one bomb or one local disaster can wipe out the entire business. But consider the cost of re-establishing in different localities plus the additional cost of operating under such conditions. The cost in so many cases would be prohibitive. There also is much talk about fallout shelters and bomb-proof shelters and the cost of building them-more cost that runs into big figures. Then there are practice evacuations, at more cost. What business can close down for a day and not suffer a great loss? Those are some of the thoughts running through managements' minds, realizing if once they get mixed up in Civil Defense they will be expected to participate in all of these and more, so they take the easy way out. Is it the easy way out? Yes, if nothing ever happens but what a gamble at such long odds. The price, our very existence. How do you make that entry on the ledger?

There is another side to the picture. Just suppose you were going all out and do those things recommended. How long would it take to do the necessary research and planning before any actual work begins? That time element alone could mean survival. If and when the situation becomes so serious in your own mind that you must do something, then there may not be enough time for the research and planning. Now is the time to do that surveying and planning, and this can be done at a cost small enough for anyone to afford.

What of the human cost that might be incurred in a local disaster or any enemy attack? A piece of machinery or equipment can be replaced in a short time, a few weeks or a few months, just by ordering it. It can be made in a short time, but have you ever thought how long it takes to develop a skilled worker or a supervisor? How much training it takes and how much it costs? Consider about twenty years for developing and training a man to the time he is ready to be employed, then to that twenty years add the time necessary for job training. If you could total up the cost of all that, there are few machines which cost so much and none which takes that long to manufacture. So when you consider cost, the most valuable asset you have is the employee. You can get a rough idea of his value today. If this country were ever subjected to an enemy attack of a

major proportion, with the loss of life we have been told we can expect, what would that skilled employee then be worth? Far more than any cost that could be considered. That leaves only one course to follow—do everything we can to protect that most valuable asset, the employees who are the backbone of our country. Without them, there would be no industry or local government.

You can carry enough insurance on your business to cover a physical loss—provided it was not caused by an act of war. You cannot cover with insurance your loss of employees. The only way you can cover your employees is by writing your own insurance policy in the form of a good Civil Defense plan that is approved by your local authorities and keep it in force by practice and improvement. In that way you may be able to avoid losing those assets that could not be replaced, and if lost could spell the end for your business and local government.

The President of the United States has decreed that Civil Defense is the responsibility of the various political subdivisions of the State, the County and the City. Each of these subdivisions, realizing that industry is better qualified to work out such a plan, has appealed to them to do so. If industry fails to provide a suitable plan, your local government cannot sit idly by. In addition to their moral obligation and the personal desire to see their community survive, they are under oath to do what they can to care for their their citizens. If they cannot get the best, then they will be forced to do the next best thing—do it themselves. Which is better, let them do the job for industry or industry do the job as they want it done? Industry has the choice now, but time may be running out.

The desire of the management of Atlantic Steel Company to do all possible for their employees, the company, the community and local government resulted in the decision to appoint a committee to make a survey of the company and submit recommendations. It took months, but the committee did a good job and management followed its recommendation to develop a Civil Defense plan and put it into written form. This took more months, but today the company has a plan which has been approved by the Atlanta Metropolitan Area of Civil Defense and the State. Through an educational program, the plan has been explained to the Supervisory personnel and the Supervisors are carrying the plan to each employee. The plan was developed by dividing the committee in groups, assigning each group to a single phase of the plan, then coordinating the various plans into one. After management's approval, it was published in printed form.

The Manual covers the following subjects:

- Alert signals—describing each signal and the general action to be taken.
- Alert Routing—how the alert gets to Atlantic Steel and how it is handled when received.

- Alarm Lists—a list of those individuals in top management, with addresses and telephone numbers to be alerted first, time permitting.
- Alert Report Form—to be used by the switchboard operator as a record of contacts made.
- Civil Defense Control Center—its location and outline of its operation and equipment.
- Shutdown Procedures—the step by step procedure of each department for emergency shut down and the duties of the personnel handling a take cover alert or an evacuation.
- 7. Shelter and Evacuation Map—showing the location of each emergency shelter and capacity.
- Evacuation Form—for each department head to list the items to be evacuated and how they will be carried, by personnel, truck or rail.
- Rolling stock list—of each automobile, motorcycle, tractor, bull-dozer, railroad engines and trucks with a list of drivers by types of equipment.
- Emergency headquarters and reporting centers
 —for post-evacuation, giving location, assignment of management personnel, procedures and equipment.
- Continuity of Management—provided for by the Board but not listed in the Manual.

- Security Vault—for safe keeping of vital records.
- Operations File—listing vital operations data and its preservation.
- Employee Education—outlining the continued education of employees on Civil Defense.
- Damage assessment report form—for department heads to make out a preliminary report of damage and a follow up detailed report.
- 16. General Information— State Warning Signals Time Conversion Table State Agency Responsibility Radiation, early effect
- 17. Envelope pocket—to file future data that may be issued containing Atlanta Metropolitan Area of Civil Defense "Route to Survival," The National Civil Defense Plan, First Aid, Facts about Fallout, Food Storage and Facts about the H-bomb.

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All of this is bound in a durable cover.

This Manual is being used by local and federal Civil Defense as an aid for other industries in developing their Civil Defense. You can help your employees, your company and your local government by developing your own plan before it is too late.



Industrial Defense in Other Countries



By Stanley J. Tracy
The George Washington University
Washington, D. C.

Mr. Tracy is a lawyer and member of the Utah and District of Columbia Bars. He also has been admitted to the U.S. Supreme Court. He retired as Assistant Director of the FBI in 1954, and later was Associate Counsel to the Commission on Government Security. He has been a Director for Alumni Relations for George Washington University since 1958. He is Co-Author, Labor Laws and Court Decisions, Annotated—1956, and was Project Director, Research Publication, A Report on Population Migrations, 1956.

The Commission on Government Security (1957) reported that the "industrial security programs for the protection of defense-related facilities ("industrial defense programs") are primarily mobilization programs, i.e., setting up standards of physical protection (fire, trespass, vandalism, sabotage, and other acts) for those facilities without classified contracts which are presently on the stand-by list or otherwise of interest to our Government because of their importance to our Nation's productive capacity at a time of mobilization or war. The Office of Defense Mobilization, under Executive Order 10421, has policy formulation responsibility for the industrial security programs of approximately 13 authorized agencies, although only the Department of Defense currently has an operating industrial defense program."

The Commission did not go into the subject of physical security as a separate item but confined its study to the limitations of its mandate from the Congress. It did recognize however the importance of the protection of defense-related facilities with this statement in its report: "To study and review the great countrywide complex of facilities requiring physical security would have been almost impossible, but the Commission recommends to Congress that a thorough review be given this subject."

America was the first to realize that man had the power to commit international suicide when on August 6 and again on August 9, 1945, two atomic bombs were

dropped on Japan. The offer to surrender came on August 10, for Japan was incapable of meeting such an emergency.

Existing complacency is highlighted by the fact that 15 years later, the Congress, despite continued world tensions, has not authorized a thorough review of industrial and civil defense needs. Centralized guidance, uniform procedures and practical liaison with Federal Defense agencies, under adequate legislative authority is a pressing necessity.

Perhaps a brief review of industrial civil defense in other countries will illustrate the thinking of people who have experienced aerial bombing. Many of them remember the early morning of April 6, 1941 when disaster approached Yugoslavia from three directions. Belgrade was bombed wantonly and without notice. The western powers and her own irresponsible government had not only failed in military defense but in civil defense as well. Within hours there was no longer any water, gas or electricity, and no communications.

Great Britain—With a civil defense history dating from 1924, and with probably the finest civil defense record of any country during World War II, Britain established the basic pattern of civil defense prevailing in most parts of Europe today.

The British program is highly organized and includes a large number of well-trained civil defense personnel, but its orientation is basically post-attack in nature. Primary emphasis is given to rescue operations, rather than to protective measures.

In 1940, Britain was reeling and a German invasion was expected. The British RAF was to be wiped out to give air mastery for the Luftwaffe, preliminary to a channel crossing. The British kept their planes out of the air, letting the cities take the brunt of the bombings. A few fighter planes at a time kept after the German bombers while others at night bombed the beaches, canals and ports where the German invasion barges were being assembled. Had British civil defense not made it possible to withstand the bombings the invasion would have been an accomplished fact in 1940 and Britain would have been out of the war.

The British program today is essentially the outgrowth of its World War II civil defense experience.

Although a large measure of civil defense responsibility rests with local communities, the central government in Britain is able to exercise sufficient control because of the centralized nature of their system of government.

British foresight was apparent even during the talks at Munich in September 1938. Air raid posters were erected in London and the general public was being instructed as to precautions and where to get gas masks. Sand bags were being filled and school children were issued tickets for space in evacuation trains.

Of necessity Britain's highly skilled population and industrial plants are concentrated in a very few urban centers, on a total land area much smaller than most countries and of course much closer to the Soviet Union.

The British today have a formidable civilian defense organization, predominantly paid for by the central government but manned by volunteers throughout the country.

Switzerland—The most highly developed civil defense programs in Western Europe are those of Sweden, Denmark, Norway and Switzerland. All four of these countries have basic civil defense laws of long standing, which have recently been revised to meet new requirements. Citizens of all four countries are liable for compulsory civil defense service, and in each large segments of the population have been trained in civil defense and large sums of money have been spent for shelter construction.

As early as 1930, Switzerland foresaw that the next war would be one of depth, as distinguished from fronts, as parachute troops could land anywhere. Each Swiss canton had its own system of defense with food and ammunition widely distributed. Each citizen was a soldier simultaneously, therefore the army was the avocation of the worker resulting in a nearly perfect combination of civil and military defense.

In 1959, Switzerland, already among the most advanced in civil defense preparedness, embarked on a new and ambitious program to construct additional shelters and to improve existing ones. Increased emphasis also was placed on civil defense training.

Swiss towns of over 1,000 population are required to maintain local civil defense systems and all organizations of more than 50 persons are today required to have trained civil defense units or teams.

All males between the ages of 15 and 65 are required to serve from 3 to 6 days each year, and women, whose service is not compulsory, may volunteer for service.

This little country will exact a high price from any aggressor.

Sweden—Sweden has probably the most advanced civil defense program in the world.

It is noted for its deep-rock dual-purpose shelters and its underground industrial facilities, some of which have been visited by American observers. The Swedes are building H-bomb shelters in the center of each city of over 50,000 population. Only limited evacuation is planned from cities in the event of a nuclear attack.

Denmark—In the level of civil defense preparedness, Denmark is second to Sweden.

Lacking the natural defenses of Switzerland, the Danes have developed its program around a system of shelters and highly trained mobile columns for disaster relief and rescue operations. The construction of shelters in private dwellings is required by law and public shelter construction is proceeding at a rate of 500 to 600 shelters per year. The Danes experienced an occupation and had close contact with World War II. They are hoping that time will be in their favor.

Norway—In Norway, where there is also a requirement for shelter provisions in private dwellings, evacuation planning is now giving way to primary reliance on shelters, with only limited evacuation. As in Sweden, dual-purpose deep-rock shelters are being constructed.

Norway, as an active member of NATO, cannot afford to ignore the possibility that it may be exposed to bombing attacks during any future European or global war. It is convinced that the defense of their civilian population is possible. Indeed, Norway has been in the civil defense business since 1936, when the first law was passed governing protection of the population against air raids.

West Germany—West Germany appears to be advancing most rapidly in civil defense. Basic legislation was enacted in 1957. A vigorous civil defense effort, emphasizing the construction of new shelters, the rehabilitation of some 3,000 existing shelters and the incorporation of shelter space in the construction of new buildings.

Rapid warning and shelter protection are now the cornerstone of West German civil defense, with evacuation and rescue services as secondary measures. The system is a decentralized one, with provincial and local governments participating on a large scale.

Volunteer organizations are functioning effectively in technical training activities with substantial direct assistance from federal sources.

Belgium and The Netherlands—The defense programs of Belgium and The Netherlands are similar to that of the British, with the exception that attention is now turning toward shelter construction. Both countries have started shelter construction programs, but the primary effort in each is geared to post-attack measures.

France and Italy—Two important NATO partners, France and Italy, are almost totally lacking in civil defense preparedness. Italy has no civil defense law and no formal civil defense organization. The French program has few volunteers and includes only limited training activities. The base is evacuation and post-attack rescue operations.

There are, however, indications of an awakening in France. Shelter needs are receiving increased emphasis in the allocation of funds for civil defense purposes and civil defense officials reportedly are planning now in terms of a multi-billion dollar shelter construction program over the next several years.

East Germany—For several years, the East German regime has steadfastly claimed that the civil defense programs of the NATO countries were another instance of warlike intentions on the part of the Western Allies.

Recently, however, civil defense measures have received attention. Ostensibly, civil defense is directed by the Interior Ministry, but the ultimate authority for civil defense is in the hands of a Russian general. Indeed

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deed, civil defense in the East is frankly regarded as another arm of the military services.

Whereas basic civil defense organization in West Germany is founded on a few large zones, shelter planning for civil defense in East Germany is organized on the basis of civil defense units in individual factories and other establishments. The only shelters so far provided for are those which will house the armed forces of the country.

Soviet Union—Civil defense in Soviet Russia, after being oriented for nearly three decades toward protection against conventional bombing and chemical attack, was modernized in 1954 to provide for atomic defense. In 1955, biological warfare defense was added.

Two years ago, new features are reported to have been added. The evacuation of children and persons unable to work and provision for large numbers of persons made homeless. Increased attention to rural areas and to surprise attacks are also reported.

The Ministry of Internal Affairs (MVD) is in charge of operations in case of an attack, with local government being responsible for civil defense preparations. Little information has been published on readiness of civilian units in factories and industrial organizations, although Soviet writers report that progress is good in some districts and poor in others.

Since 1931 a dispersal program for industry has resulted in the establishment of many new cities in Russia, and civil defense considerations are also responsible for the broad streets and the wide spaces between buildings in many Soviet cities.

In case of attack, residents continuing to work in cities are expected to use roofed trenches, subways, shelters with reinforced concrete roofs (often basements), and other similar measures.

An extensive compulsory program is under way to train the population as a whole in the fundamentals of civil defense. The Soviets claim that the majority of their citizens have had at least 32 hours of civil defense instruction since 1955. The lessons include the use of gas masks against real poison gas for short periods, and the extinguishing of fires.

Civil Defense Societies—The volunteer Civil Defense Association has pointed out to the Germans that in World War II, those areas with the best preparation suffered the lowest loss of lives. The Association, with its headquarters at Cologne, reaches down to all levels of the population through a myriad of subordinate agencies. It takes as its function the responsibility to bridge the gap between all the various civil defense services and the general population.

Part of the association's responsibility is the self-help warden service; however, included are measures in institutional civil defense, including not only industrial civil defense, but among the state railways and postal service as well. The Norwegian Industries Association established a volunteer organization in order to carry out its program and it currently has the participation of 1,530 plants with a labor force of about 200,000.

The Dutch have established a standard of energetic participation in civil defense work, which, among the various volunteer civil defense services of Europe, is probably unparalleled for sheer enthusiasm and smooth organization. Observers have pointed out that the demonstrated proficiency in industrial civil defense was tremendously impressive.

Industrial civil defense societies are destined to play a major role in organized defense planning and execution.

Protecting Vital Industrial Records and Documents

(Continued from page 110)

tioned floor space was decreased from 95,000 sq. ft. to 66,000 sq. ft. We are now operating with four less people and as a result, a reduction of 35% in operating costs was realized during 1958. In addition, we have ideal working conditions and maximum security. The possibilities of the use of space is unlimited. Such space not only facilitates practical, economical, safe and secure operations of various types during normal times, but provides the ultimate in the event of possible disaster.

Some corporations have gone to considerable expense to set up disaster operations which, on very short notice, could be done in these facilities. At present, we are relying on public utility to supply electric power, with an emergency Diesel generator unit as standby. Provision could be made for independent electric power. Such areas are not only practical for storage, but could be used for many types of manufacturing activities.

The description of this Records Program indicates how, in connection with records, a controlled records program can be combined with a Civil Defense Program. The records are not only protected and controlled for economical normal operating, but facilities are available for promptly converting to emergency measures as well as providing facilities for an emergency Headquarters and other types of emergency operations. This we feel is particularly necessary due to the varied types of manufacturing in which this company is involved, much of which applies to development and manufacturing of items critical to our Country in the event of an emergency. This is the type of Records Management and Security Program which can be combined into a normal economic business activity and at the same time is practically the ultimate in safety and security.

University Training in Industrial Defense and Mobilization



By Arthur F. Brandstatter Director, School of Police Administration and Public Safety Michigan State University East Lansing, Michigan

Mr. Brandstatter has served with the Detroit, Michigan, police force, as Chief of Police of East Lansing, Michigan, and as a Major in the U.S. Army during World War II. Mr. Brandstatter also served as a consultant to the High Commissioner's Office for Germany, the Governmental Affairs Institute, Washington, D.C., U.S. Treasury Department and the Government of South Vietnam. He is a member of the International Association of Chiefs of Police, Michigan Association of Chiefs of Police, Society for the Advancement of Criminology, Alpha Phi Sigma, Police and Sheriffs Association of North America, Fraternal Order of Police (Honorary) and American Society for Industrial Security. He is Chairman of the National Campus Safety Association, and active in the Higher Education Safety programs of the National Safety Council.

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The demands of nonmilitary defense in an age of nuclear weapons are imposing requirements on university curricula which are as yet only partially identified and recognized by university teachers and administrators, but which are none the less real and urgent. This is especially true in curricula preparing law enforcement personnel. The training requirements posed by the increasing professionalization of industrial security afford a particularly interesting example illustrating these generalizations. The fact that the American Society for Industrial Security has seen fit to sponsor this special issue on Industrial Defense and Mobilization is one more example of the progressive leadership being afforded by the industrial security profession in this relatively new and imperfectly understood field.

The scope and emphasis of the ensuing discussion will be clearer if attention is directed to terminology as used herein:

Nonmilitary Defense *: All measures taken by civilian agencies to: (1) minimize the effects of enemy attacks on population, cities, industries and government, (2) assure continuity of essential production, government functions, and community services in case of attack, and (3) restore essential industrial, governmental, and community facilities after attack.

NOTE: By usage the term "nonmilitary defense" is coming to include "defense mobilization" as an additional component.

Defense Mobilization **: The employment of government and the national economy for meeting essential civilian and military requirements.

Disaster Control: Measures to prevent or cope with natural disasters, large-scale industrial accidents, and other non-war caused catastrophes.

In the discussion which follows "disaster control" (referring to non-war caused disasters) will sometimes be bracketed with "industrial defense" because the latter may be viewed as an extension of the former. "Non-military defense" is used in reference to the total national war effort other than military operations. Two of its components, "civil defense" and "defense mobilization," are discussed in passing. They are defined as follows:

Civil Defense **: Activities and measures designed or undertaken (1) to minimize the effects upon the civilian population which would be caused by an attack upon the United States or by a natural disaster, (2) to deal with the immediate emergency conditions which would be created by any such attack or disaster, and (3) to effectuate emergency repairs to, or the emergency restoration of, vital utilities and facilities destroyed or damaged by any such attack or disaster.

Industrial Defense *: Includes all nonmilitary measures designed to protect the industrial segment of the Nation from hostile activities, including military and covert, in order to assure the continuity of essential production and services in the event of attack, including (1) identification of most likely industrial targets, (2) reduction of industrial vulnerability, and (3) preparation for postattack industrial rehabilitation.

Industrial defense problems in a company tend to gravitate to those who historically have been concerned with peacetime disaster control. The industrial security officer and his staff, inevitably concerned with traffic control, property protection, and other aspects of dis-

^{*} Civil Defense Glossary, H-25-2, Federal Civil Defense Administration, 1956.

^{**} National Plan for Civil Defense and Defense Mobilization, Office of Civil and Defense Mobilization, Glossary.

aster control, become involved in industrial defense measures from the standpoint of his specialty if from no other. Other executives who become similarly involved are the safety engineer, fire marshal, and in some companies, line officers whose "normal" responsibilities are such that they become logical choices for the disaster control function—the plant superintendent, the plant engineer, etc. In some companies the industrial security officer may be administratively responsible for the fire and accident prevention (safety) functions; in others his working relationship with these specialities must be effected laterally across organizational boundaries.

This brief review of the emerging disaster control responsibilities of the security, safety, fire prevention and related functions in company and plant situations demonstrates that these occupational specialties are taking on a new dimension, and that they are being confronted with problems only partially recognized, if at all, in curricula designed to train people for these specialties.

In addition to becoming involved in industrial disaster control and defense measures from the standpoint of their specialties (security, fire protection, safety, etc.), many of these executives are also being called on to assume over-all planning and command leadership of the disaster control program. This responsibility cuts across and draws on the professional specialties mentioned, but also transcends them; it also poses problems which are only partially recognized, if at all, in existing curricula.

The addition of industrial defense to disaster control requirements adds one more dimension to the problem. The net result is a virtual new profession—the industrial disaster control and defense officer—in part built up from extensions of the security, fire protection, and safety engineering specialties, but also requiring insights, skills, and training which have not been a part of them as traditionally conceived.

Michigan State University's School of Police Administration and Public Safety for some time has been interested in the training requirements resulting from the emergence of the disaster control and nonmilitary defense responsibilities being placed on law enforcement and other officials in both public and private jurisdictions. Perhaps I should describe the results of the School's work in this area to date and its hopes for the future.

The principal result of our work in this field to date has been to incorporate 12 clock hours of instruction in industrial defense into our course in Industrial Security Administration. This instruction covers such topics as industrial disaster control and defense plans, organization, training, shelters, evacuation, continuity of management, protection of vital records, mutual aid, relations with civil defense authorities, etc. (For a general description of the M.S.U. Industrial Security curriculum see Robert Sheehan's article, "The Industrial Security Administration Curriculum of Michigan State

University" in the January 1959 issue of this journal.) Consideration is being given to development of a course which would treat this subject matter more definitively and also might include such topics as (1) the threat of nuclear warfare; (2) weapons effects; (3) capabilities and limitations of industrial defense countermeasures; (4) the National Plan for Civil Defense and Defense Mobilization; (5) the National Program for Industrial Survival: (6) the National warning and communications system; (7) vulnerability assessment of industrial plants; (8) protective construction; (9) emergency repair and restoration; (10) legal and financial aspects of industrial defense; (11) deconcentration of critical production; (12) dispersion of new plants; (13) informing and educating employees in methods of personal and home survival; (14) Government-industry cooperation on industrial defense and mobilization; (15) postattack damage assessment; (16) postattack production measures; (17) continuity of the money and banking system; (18) economic stabilization; and (19) the role of the company and plant in administration of war economic controls. The range of these topics indicates that accepting nonmilitary defense as a part of our way of life poses some real challenges to university teachers and administrators responsible for educating the industrial security executives of the future.

As a result of problems encountered and interests formed in this curriculum development, the School called two exploratory conferences of representatives from various universities, companies, trade associations, government agencies and the like which have done work or evinced a special interest in the industrial disaster control and defense field. (The second of these conferences, in September 1958, was held under the joint auspices of our School and the New York University Center for Safety Education.) These conferences were held as a result of our School's belief that there is considerable activity in the industrial disaster control and defense field relevant to its curriculum and research interests, and that we and others can profit from more communication and understanding concerning developments, issues, and problems in this relatively new and imperfectly understood field. In addition to obtaining much in the way of information and ideas useful in the School's curriculum work, there was one other outcome from these conferences deserving of mention. This was a proposal worked out by a drafting subcommittee for a university center for industrial disaster control and defense services-training, curriculum development, research, and advisory services. To be financed initially by foundation sources, the proposed center would draw on and support work going on in the industrial disaster control and defense field in various universities, companies, private organizations, and the like. The School will test the feasibility of this proposal in its future work programs.

Equally as important as the developments related above have been the network of communications and (Continued on page 151)

National Program for Survival

(Continued from page 8)

developed with the full advice and assistance of industrial leaders, including experts and specialists in industrial security, plant protection, safety, training, emergency and disaster planning, and related fields. Ad hoc advisory committees of industrial executives are being regularly used to revise and improve the workable program for industry defense and survival.

The National Program for industrial survival is developed and coordinated by the OCDM Industry Office. This office assembles from all sources within the Federal Government, and from private business and industry, the knowledge and skills necessary for an effective industry defense, and makes it available to State and City civil defense officials and industrial executives.

In addition to the special advisory committees composed of industrial executives and government officials which are utilized in developing the program, National industrial and trade associations and professional organizations are consulted. Plans are made for utilization of their resources in providing information, education and guidance to industries through their members.

A variety of publications are provided which outline the plans, methods and techniques of industrial survival planning, organization and operation. Encouragement and assistance is given to colleges and universities in developing special industrial survival training courses. Movies, film strips, exhibits, speeches, and other training and promotional materials are made available to State and local civil defense officials and industrial executives for their use in developing and promoting industrial defense and survival activities.

OCDM Regional Offices provide guidance and assistance to States through specialists who are concerned especially with industrial survival planning and preparedness.

A special 5-day Industry Defense and Mobilization course, which is sponsored by the OCDM Industry Office, is conducted periodically at the OCDM Staff College in Battle Creek, Michigan. This course stresses methods of planning, organizing, and preparing for survival in industrial plants and other large facilities. There is no charge for tuition. Requests for information on dates and application for attendance should be sent to your local or State civil defense director, or to OCDM Operational Headquarters, Battle Creek, Michigan. Courses during the remainder of 1960 are scheduled for August 22-26 and November 14-20.

Other courses in civil defense and defense mobilization are conducted by the OCDM Staff College, the OCDM Radiological Defense School, the OCDM Eastern Instructor's Training Center (Brooklyn, N. Y.), and the OCDM Western Instructor's Training Center (Alameda, California). Information on these courses may likewise be obtained from your local or State civil defense director, or OCDM Operational Headquarters, Battle Creek, Michigan.

Other Federal Agencies—At present many other Federal Agencies are working with industry in certain aspects of civil defense and mobilization, which includes planning for industrial survival. Each Federal Department and agency carries out those civil defense and defense mobilization activities that are inherent in its normal responsibilities, or are delegated to it by the OCDM Director.

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Each agency advises and assists those industries with which they normally deal in their everyday contacts regarding the protective measures outlined in the National Program for Industrial Survival. For example, the Department of Agriculture works directly with food processing, farm equipment and fertilizer industries. The Department of Interior deals regularly with the oil, coal, power, gas, minerals, and related industries. The Department of Commerce maintains normal cognizance of twenty-five classifications of industry through their Industry Divisions in the Business and Defense Services Administration. The Federal Reserve System works directly with the banking industry. The Federal Home Loan Bank Board deals with savings and loan and other financial groups. The Food and Drug Administration, Interstate Commerce Commission, Federal Power Commission, Federal Communications Commission, and others work closely with industry in their respective fields. The General Services Administration administers a program for saving life and protecting property in Federally owned and operated buildings and facilities. The Department of Defense is especially concerned with security measures and industrial defense activities in certain key facilities. These and other agencies have a stake in industrial survival planning.

To render assistance and guidance to their assigned industries on problems of disaster planning and preparedness other agencies also conduct special training courses. The Department of Defense provides industrial survival training in courses conducted by the Industrial College of the Armed Forces and the National Industrial Defense Seminars and Resources Conferences.

A special course in industrial defense and disaster control is conducted regularly at Fort Gordon, Georgia, for industrial executives. This course outlines the measures to prevent and minimize loss or disruption of production capability and assure rapid restoration of production after attack. Requests for information on dates and application for attendance should be sent to the Provost Marshal General's School, U. S. Army, Fort Gordon, Georgia.

A special course in industrial security, which describes methods of protection of classified defense information in the hands of industry, is conducted by the Assistant Chief of Staff, Intelligence (G-2). Information on dates and attendance is available from the Commandant, U. S. Army Intelligence School, U. S. Army Intelligence Center, Fort Holabird, Baltimore 19, Maryland.

State Governments—It is the job of the State Governor, with the assistance of his civil defense director, to establish and direct the State civil defense program, to pro-

vide guidance and assistance in planning for industrial survival, to assign certain civil defense activities to appropriate departments of State government, to assist and advise local governments in developing their civil defense programs, and to formulate and negotiate mutual aid plans and agreements with other States.

Many States have assigned responsibility for industrial survival planning to the departments of State government which are concerned with safe working conditions in industry and industrial development, such as the State Department of Labor and Industry, Industrial Relations, Commercial Development, etc. Therefore, as each industrial plant or institution is inspected for safe working conditions the state inspector also surveys the needs for civil defense preparedness and advises and assists industrial executives in such activities.

Each of the 50 States, as well as the District of Columbia and the Commonwealth of Puerto Rico, has developed an "Operational Survival Plan" which has been promulgated by its Governor as the official civil defense plan. Within these states there are 240 area plans covering all target cities. Twenty-two hundred local government plans are in various stages of development. These Operational Survival Plans set forth the non-military courses of action which will be taken by Federal, State and local governments, as well as industry, labor, and individuals, in order to assure national survival. The plans call upon industry to prepare in advance for operation in emergencies and to assure availability of personnel, facilities, and raw materials needed for post attack, production, and economic stabilization.

Local Governments—The Mayor, County Commissioner, or other elected local government leader, with the assistance of his local civil defense director, is responsible for establishing and directing the community civil defense program. He must provide guidance and assistance to local industries in planning for industry defense and survival, coordinate and direct civil defense activities among local public and private groups, and negotiate mutual aid plans and agreements with other communities.

Each local civil defense organization is urged to designate a community industry defense coordinator to provide community leadership in developing, promoting and coordinating civil defense programs at the work-place—in industrial plants and large facilities. A community industry defense advisory committee composed of community industrial leaders assists the local civil defense director.

Over 2,200 local governments have developed Operational Survival Plans which outline the non-military activities for each department of local government, industrial firms and individuals. These plans have been developed in cooperation with State government and have been coordinated with State Operational Survival Plans. Industrial executives should be familiar with the Operational Survival Plan which has been developed by their local government since company actions must fit

within the general plan of the community. Also, families of employees must be familiar with the actions to take under the community plan.

The community industrial survival program consists of providing encouragement, guidance and assistance to business, commercial and industrial firms in the community regarding civil defense methods for private firms. Regular meetings of plant and facility defense coordinators are held to provide current information and guidance, to exchange ideas for solution to problems and report progress on planning and organizing within facilities. Visits are often arranged among plants and facilities and joint training and test exercises conducted. Local service groups, safety councils, labor unions, manufacturers associations, chambers of commerce, trade associations, and conferences and conventions are fully informed and utilized.

Many communities periodically conduct industrial defense training conferences which are attended by industrial and business executives. These are usually sponsored by the local civil defense director in cooperation with a local industrial, business, or civil group to inform and educate in methods of planning and organizing for industry defense and mobilization. National, Regional, and State civil defense officials, as well as industrial executives, frequently serve as instructors. Local civil defense organizations often conduct special courses in rescue, radiological monitoring, and other subjects which are available to industry.

THE ROLE OF TRADE ASSOCIATIONS AND PROFESSIONAL ORGANIZATIONS

Many national industrial organizations and trade associations have developed publications or otherwise provided civil defense information to their members. Among these are the Chamber of Commerce of the United States, Edison Electric Institute, National Petroleum Council, American Iron and Steel Institute, National Association of Manufacturers, American Bankers Association, National Armored Car Association, Associated General Contractors of America, and the Mechanical Contractors Association. In addition to the American Society for Industrial Security other professional and technical organizations such as the National Safety Council, Public Personnel Association, National Institute for Disaster Mobilization, U. S. Civil Defense Council, and other groups are working actively in industry defense and survival planning, and are able to furnish information on various aspects of emergency and disaster preparedness.

WHAT SHOULD INDUSTRY DO TO PREPARE FOR SURVIVAL?

Industrial plants can immediately prepare for civil defense within and through their existing organizational structure. They are able to perform for themselves the functions necessary for survival and continued operation in time of disaster with a minimum of help from public protective forces. The responsibility for planning and operating an industry defense program in plants and facilities rests with the owners and managers in cooperation with employees.

The objective is to attain maximum preparation for disaster in plants and facilities, and provide for full utilization and coordination of these resources into planning for survival of the community. All measures which tend to minimize the effects of attack on industries and facilities are included in and constitute the National Program for Industrial Survival.

Many industrial organizations already have taken certain disaster precautions. However, every industry must work continually on plans to overcome production interruptions due to attack damage. There is no question that this work must be broadened and intensified.

In reaching solutions to the problems of plant protection and survival of employees, many security executives have taken the lead in their companies by providing assistance in (1) achieving organizational capability for self-help and survival at the workplace and (2) informing and educating employees in methods of personal and home survival. To accomplish these objectives security directors and supervisors must be familiar with the nature and extent of national survival planning. They must know specifically what to do in order to be prepared for enemy attack, major natural disaster or industrial accident, and be familiar with what other companies are doing in disaster planning and preparedness.

The principles of planning and organizing for survival at the workplace are the same for all large facilities. It is clear that there can be no one plan which will meet the requirements of all companies and plants. However, with information gathered from Hiroshima and Nagasaki, from the A-bomb and H-bomb tests, and from the thinking of many industrial executives who have already made certain disaster preparations within their companies and plants, we can suggest certain elements of a survival program which can be tailored to fit each company and plant situation.

Typical actions which industrial management can take to minimize the effects of attack—to protect the domestic mobilization base and give greater assurance of production continuity are classified herein as actions for (1) protecting the lives of employees and plant property, (2) preserving the corporate structure and (3) promoting the industrial survival program.

GUIDES TO PROTECTING LIFE AND PROPERTY IN INDUSTRIAL PLANTS

1. Get in Touch with the Local Civil Defense Director. It is his job to provide guidance and assistance, and to coordinate the emergency planning activities among the various departments of local government. This includes also the development of plans to utilize fully and coordinate the non-government leadership and resources into community emergency preparedness. Continual liaison with local civil defense officials and other departments of local government must be maintained to ensure proper coordination. Up-to-date emergency planning

information, guidance, and assistance should be available to you from your local civil defense director and emergency planners in the various departments of local government.

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2. Establish Company and Plant Leadership Responsibility for Disaster Preparedness. The first step in the actual preparation for disaster is the appointment of a single individual at both the company level and in each plant—a disaster planning or civil defense coordinator—to provide coordination and direction of the overall corporate disaster plan and the disaster plan in each plant.

Second, at both the company and plant level a disaster or civil defense advisory committee should be designated representing various departments of the company, to assist in the development of the various phases of the disaster planning or civil defense program.

Third, issue appropriate policy statements and administrative directives to establish the disaster control program.

It is imperative that coordinators and committee members maintain close liaison with civil defense officials. They should become thoroughly familiar with the authority, organization, and emergency procedures which are established by law and become effective upon declaration of an emergency by the President or Congress.

Coordinators, committee members, and service chiefs may obtain valuable information and training by attending the OCDM Staff College Course in "Industry Defense and Mobilization" at Battle Creek, Michigan, and other OCDM courses such as Rescue and Radiological Defense. A variety of publications also are available.

3. Organize and Train Employees for Self-Help. Selfhelp or self-protection is the concept of training each employee, and organizing and training small groups of employees, within and among industrial plants, large buildings and other facilities for specialized emergency services, such as fire-fighting, rescue, police, first-aid, chemical and biological defense, and radiological monitoring to safeguard the building and its occupants in time of attack or other major disaster. The framework of an effective disaster control or self-help organization is already in existence in most large buildings and industrial plants. For example, most plants already have organized and trained fire brigades, guard services, rescue teams, first-aid and welfare groups. In order to be prepared for self-help the problem is simply one of enlarging and extending already organized groups, with the addition of perhaps a few teams concerned with radiological monitoring, chemical and biological defense, and rescue.

I again emphasize that a civil defense self-help organization does not replace the normal plant protection organization or emergency forces. Instead, it is designed to help expand existing emergency and protective groups to meet large scale disaster more effectively.

These specialized groups can serve as auxiliaries to the various departments of local government, that is,

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police, fire, health, radiological defense, etc. Therefore, by enlargement and extension of normal industrial emergency protective groups, and their enrollment as auxiliaries to the various protective forces of local government, we will achieve a "built-in" community capability for quick action in an emergency.

We believe that any plant is capable of organizing for its own self-protection provided that management supplies leadership and a chain of command for emergency planning and emergency action.

All planning, training and test exercises should be conducted in cooperation with community officials—the Mayor and civil defense director, and other local government department heads.

All employees should be trained in self-help methods, including fire-fighting, rescue, first-aid and radiological defense. When employees are informed and trained in emergency procedures, under management leadership at the workplace, there is a vital by-product of "take-home training" and information which is helpful also in accomplishing survival preparedness in the home.

- 4. Establish a Plant Warning System. Arrangements should be made to receive the air raid warning and to disseminate it quickly to employees throughout the plants. Where buildings are spread over a wide area or located beyond hearing distance of a community warning, a separate warning system may be necessary. In many instances the existing public address system can be used. However, the warning system must be adequate to reach all office buildings, plants, laboratories, and all other places where employees are located.
- 5. Establish a Control Center and Communications System. A control room should be set up with communications to the nearest civil defense control center and to other plants in the community which are in mutual aid associations. It is especially important for the plant civil defense coordinator to be acquainted with the situation in order to use effectively all resources at his command during an emergency and to coordinate the activities of the different self-help services, and to check resources. A control center is useful in peacetime disaster such as fire or explosion when damage occurs simultaneously at several points, and is vital during an enemy attack. Even a small plant should have a communications control system.
- 6. Develop Emergency Shut-Down Procedures. Orderly and speedy shut-down in industrial plants is vital in time of emergency. Whether simply pulling a switch, closing a valve, or cooling a large furnace, all must be planned for in advance. This is true also in office buildings and institutions. In large buildings explosive gas fumes, high voltage lines, fire, and similar hazards can be almost as deadly as natural forces or military weapons. In some instances, due to the manufacturing processes, disorderly shut-down could result in self-destruction of the plant—destruction almost as great as that resulting from an attack. Procedures must be planned and tested. Mock shut-down training exercises are conducted regularly in many plants.

7. Plan for Evacuation of Industrial Plants. Evacuation in case of enemy attack, when ordered by local governments, includes movement of employees out of plants and buildings to safer areas outside the city.

Movement of civilians from dangerous and potentially dangerous areas in time of civil defense emergency requires thorough organization, timing and supervision. Great confusion can result from the spontaneous and rapid movement of employees when not properly directed. The plant civil defense coordinator should designate at least one person to be responsible for evacuation planning.

A general traffic plan, both within and outside the plant must be made, directional signs and instructions posted, and adequate transportation provided. The plans should include a priority of departure for operating and maintenance personnel so that plant shutdown can be orderly, and production resumed as quickly as possible.

Regarding plans for evacuation upon receipt of warning, The National Plan for Civil Defense and Defense Mobilization states, "Target cities and other areas near assumed targets will, if time and conditions permit, execute plans for evacuation or dispersal to prepared reception areas." Decision to evacuate is in the hands of local government.

It should be kept in mind that there never will be definite assurance of a specific amount of warning time. Therefore, plant personnel must be ready to move fast if local authorities decide there is enough time for evacuation.

8. Provide Shelters for Employees. If there is not sufficient warning time to evacuate the plant, the only alternative is to take shelter.

In event of a nuclear attack on this country, fallout shelters offer the best single non-military defense measure for the protection of the greatest number of our people. The National Plan for Civil Defense and Defense Mobilization states, "If time and conditions do not permit evacuation (on receipt of warning), full advantage will be taken of existing shelter, and fallout protection will be improvised."

As an immediate, temporary measure, areas should be designated on the plant premises where employees may be protected from radioactive fallout.

Development of a full-fledged plant shelter program may involve improving the shielding afforded by existing plant buildings, the construction of special dualpurpose shelters, or a combination of both methods.

Build deeper and stronger-walled basements, with thicker and stronger first-floor slabs, or construct separate underground shelters. Provide emergency power and sanitation facilities and filtered ventilation. A two weeks' supply of food, water, and emergency medical supplies should be available in shelter areas.

Also, employees should be provided with civil defense shelter publications and urged to prepare a home shelter.

OCDM is conducting continuing shelter research, and can provide advice and assistance to industry in developing plant shelters as safeguards against radioactive fallout.

9. Establish a Plant Security System for Prevention of Sabotage and Espionage. Sabotage is an effective means of attack. Therefore, industry should take appropriate measures to prevent the commission by misguided persons or enemy agents of any destructive act to endanger employees or impair the productive capacity of the plant. Measures also are needed to prevent the collection of information which might contribute to the enemy's knowledge of the Nation's war potential. Such information might be used to advantage by an enemy in attacking this country either through direct or covert means.

Protective measures include adequate guard or watchman services, fencing, protective lighting, investigation of applicants and employees, pass and identification systems, safeguarding classified information and proper reports to the FBI of suspicion of sabotage, espionage or subversion.

Action against sabotage and espionage is primarily the responsibility of the Government, but there are many steps that industrial plants can take to reduce or eliminate this danger.

10. Provide Emergency Protection from Delayed or Unconventional Weapons Effects. Clandestine and unexploded ordnance are hazards which must be dealt with promptly. Organization and training must insure prompt reporting to state and local forces which will conduct reconnaissance for unexploded ordnance and report the existence of such ordnance to the closest Department of Defense Explosive Ordnance Disposal Unit or ZI-Army Commander through the OCDM Regional Director.

State and local authorities will provide for restriction of areas and protection of persons from such ordnance, including execution of plans for evacuation to safer areas, until arrival of the responsible explosive ordnance personnel. The Federal Bureau of Investigation will investigate reported incidents of clandestinely-introduced weapons. The Department of Defense, through its Explosive Ordnance Disposal Units, will disarm atomic weapons and dispose of other unexploded weapons. The Atomic Energy Commission will take custody and dispose of fissionable materials of unexploded ordnance.

11. Participate in Industrial Mutual-Aid Associations for Emergency. This type of association is an organization of industry officials representing facilities in a particular area, united by voluntary agreement to assist each other with facilities, equipment, and manpower as needed in time of disaster.

Few plants can provide all the services and equipment needed in time of disaster. By joining up with other large facilities in the neighborhood and through proper coordination with departments of local government, assistance can be provided to one another in the form of equipment, materials or personnel in time of disaster. Many mutual-aid groups have cataloged their supplies of fire hose and other fire-fighting materials and equipment, medical supplies, rescue items, and other emergency-use materials so that each member of the group knows what is on hand. in

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Although industrial mutual-aid associations are not new, the idea is especially applicable to civil defense for dealing with wartime and natural disaster problems, since experience gained in peacetime disasters is especially valuable in preparing for wartime disasters.

The emergency operations plan of the mutual-aid association is part of the total emergency operations plan of local government.

GUIDES TO PLANNING FOR PRESERVATION OF THE CORPORATE STRUCTURE

1. Plan for Continuity of Each Major Corporate Function. The enlarged aspects of industrial defense planning must involve practically every department head in a company; the security officer, the purchasing agent, the treasurer and controller, the personnel director, the general counsel, the secretary, the production manager, the chief engineer, the head of research and, of course, the Board of Directors. Each department head must examine the functions for which he is responsible in peacetime and work out answers to problems involving continuity during and following attack. Unquestionably, many peacetime functions would become unnecessary while some would become extremely complicated and vitally necessary.

2. Assign Emergency Functions to Each Employee. A severe emergency may in a short time convert an existing peacetime organization into quite a different type of organization structure with altered or expanded functions. Such drastic changes inevitably mean that some groups of employees will become surplus at the same time that other units urgently need more workers. A systematic placement and transfer plan may prove of great value under such conditions. Likewise, plans should be made for quick emergency employee training, revised salary and wage administration, hours of work, protection of the retirement system and union relations.

3. Plan for Continuity of Management. For each key position, replacements should be designated in order of succession. Thus the surviving person highest on the list could assume temporary direction of the position following attack. This is an important part of disaster planning. No company is better than the people who make it work. If a company or plant is to continue production during and following attack, its key jobs must be filled.

Leadership needed for continuation 'of production after an attack could become virtually non-existent, unless plans are made prior to an attack for lines of succession. Preservation of managerial skills must be a major part of the disaster control and civil defense planning.

4. Amend By-Laws and Administrative Regulations. Appropriate legal authorization is often necessary to act

in event of emergency. Each function of the various offices and departments of the company should be reviewed to determine whether the function should be continued in wartime, and alternate solutions listed. By-Laws should be amended to provide authorization for establishment of succession lists and for reestablishing the company and continuing production under conditions caused by attack disaster.

5. Establish Alternate, Corporate and Plant Headquarters. If continuity of management is to be effective, managers must have a place to assemble and work which is equipped and furnished for carrying on corporate operations during and after attack.

The emergency company headquarters should be located at a point outside a critical target area. Often it is possible to establish this at a point where the company already has an installation. It should be equipped with communications and living quarters.

- 6. Designate Employee Reporting Centers. Additional or secondary emergency reporting points should be established for all personnel. Some companies have set up reporting centers at the homes of executive personnel who reside in suburban areas. Certain records are maintained at these locations and arrangements have been made for priority telephone service in an emergency. The cost of this type of planning is insignificant when compared with the activities of recovery-planning which can be conducted at these locations during or after the emergency. A few companies have stored "disaster checks" which may be given to employees who report to these centers following an attack, as a source of funds until the plant can resume operations.
- 7. Protect Vital Industrial Records and Documents. Protection of vital records includes the duplication and safe storage of records important to the continuation of the company and plant production. Written descriptions of activities, manufacturing processes, engineering designs, and essential legal documents and accounting records must be safeguarded to aid in continuation or restoration of production.

One firm has described the disabling results of a loss of vital records as "corporate amnesia." Records protection is one of the easiest concrete precautions a company can take and might well be among first steps in disaster planning.

Microfilm is one means of providing duplicate records. Protective vaults should be provided at or near alternate headquarters or plant sites. Many manufacturers, banks, and insurance companies have already taken action to protect vital records.

8. Develop Emergency Financial Procedures. Money may be needed promptly following attack for wage payment, cash advances to employees, payment of bills, and purchase of survival items such as medicines, food and equipment. Some companies maintain bank accounts of an unrestricted nature at scattered locations and have established lines of credit at a variety of places.

Emergency procedures for drawing company funds should be developed in advance. Banking arrangements

should be adequate and corporate by-laws should have ample provisions for withdrawal of funds. A list of depositories in which the company has its funds should be kept current and on file in the company record storage vaults. In some instances it may be desirable to deposit a small amount of cash at the alternate company headquarters and in each of the security storage vaults.

9. Plan for Emergency Repair and Restoration. In a natural disaster, emergency repair crews usually are available from many outside areas. In event of attack, however, outside assistance may not be available. Therefore, each plant must have its own emergency repair crews.

A good disaster plan will provide for the organization and training of selected employees to assess damage, and repair damaged electrical, communication, gas, water and other vital facilities. Local utility companies can assist in this plant training program.

Plans are required for the replacement or repair of damaged production machinery and supplies, and preparations to use alternate production methods, substitute production machinery, and standby power and communication equipment.

10. Deconcentrate Critical Production. When production of essential items is concentrated geographically, an inviting target is offered to the enemy for inflicting the greatest amount of industrial injury in a given attack. Deconcentration refers to the geographic decentralization of critical production so that all manufacture of a critical item is not in one location.

Decentralizing the production of critical items also reduces industrial vulnerability by making it less likely that a single enemy attack could strike a mortal blow to the entire production of a given item. This type of decentralization refers not only to the production lines, but also to management and technical offices, and other departments concerned with the production of the item.

Deconcentrating key departments or smaller segments of an industry will help assure continuity of production of essentials

11. Disperse New Industrial Plants. Obviously, the best defense method for protecting our domestic mobilization base and ensuring survival is industrial dispersion. Where deconcentration of production aims at scattering the manufacture of a particular item, dispersal of industry is directed at thinning out industrial areas so as to minimize the destruction of industrial capacity by attack on a given target. This is the employment of the simple military measure of using space and topography for defense of industrial plants against attack.

By multiplying the number of targets an enemy must hit to inflict the same total damage, industrial dispersal tends to reduce the total effects of attack on our capability to produce.

As industrial plants are established in less concentrated areas, and employees and their families move to those locations, metropolitan-area populations are thinned to some extent, making those areas less attractive as enemy targets. In addition to dispersal of pro-

duction, it is evident that certain finished items, especially materials necessary for survival, be dispersed and available for immediate use following attack.

The Federal Government particularly urges the dispersion of new and expanding industrial facilities.

12. Prepare to Report Damage Quickly. Early and comprehensive assessment of damage caused by attack is vital to quick recovery. Each level of government will design, construct and maintain in operating condition systems capable of providing rapid and reasonably accurate estimates of (1) the anticipated and existing locations and degree of attack effects, especially radiological contamination and (2) what has survived the attack and is useful for recovery. Industrial managements will be expected to cooperate fully in reporting as required to local authorities the nature and extent of damage to their plants. Decentralized and dispersed multi-plant corporations will need to receive such information also at their emergency company headquarters.

GUIDES TO PROMOTING THE COMPANY INDUSTRIAL SURVIVAL PLAN

- 1. Prepare Corporate and Plant Disaster Plan Manuals. Put the corporate and plant civil defense plans in writing. The plant Civil Defense Coordinator and the employee-management civil defense advisory committee should write an emergency operations plan which includes:
 - The company policy statement regarding civil defense planning.
 - 2. Statement describing the purpose of the plan.
 - A description of warning and emergency communications procedures.
 - The nature and responsibility of each plant protective service, a list of team leaders and members, and an outline of "who does what" in a disaster.
 - Drawings showing plant floor plans, shelter locations, and evacuation routes.
 - A list of available emergency equipment and a list of needed equipment.

The disaster plan should be furnished to executives and members of the protective and self-help groups. The manual could serve as a guide for periodically reviewing and up-dating the plan.

- 2. Tell Employees About the Disaster Plan. Hand-books should be prepared containing basic information regarding the company plan and information necessary for self-protection at the workplace, including description of the Alert Warning Signals, floor plan drawings showing shelter areas and hazardous points within the plant, maps showing evacuation movement routes within the plant and to safe areas outside the city. Such information should be given to all employees.
- 3. Test the Plan. Conduct periodic exercises and drills. Management personnel should go to the emergency headquarters and practice working under simulated wartime emergency. All plant employees should practice

evacuation and taking cover. The national civil defense exercises, such as "Operation Alert" and "Civil Defense Day" provide excellent opportunity to cooperate with local government in testing communications systems and survival plans in plants and office buildings.

4. Urge Employees to Prepare Their Families and Homes for Wartime Emergency and Natural Disaster. One of the most effective ways to reach people with survival information is where they work. This is where the message takes on real meaning, for if the message to the individual is to be consistent it must be practiced where he finds himself. In other words, if the individual is to be prepared, he must be prepared in his home as well as at his workplace.

As a part of the program for informing and educating employees in methods of personnel and home survival, each employee should be provided with a wallet-sized card, which is available from local civil defense offices, containing brief instructions regarding the alert warning signals and what to do.

Civil defense publications such as "Home Protection Exercises" and other appropriate manuals are available from local government offices. These publications should be given to employees with an appropriate letter from management urging them to make disaster plans at home. This is not only important in survival planning but is a vital service to the community. Employees should be familiar with the neighborhood survival plan and be ready to help, should an attack occur while they are at home.

The National Plan states that each person and family must be prepared to meet individual survival requirements for 2 weeks following an attack without dependence on outside assistance. Each employee and their family should learn:

- 1. Warning signals and what they mean.
- 2. The community plan for emergency action.
- Protection from radioactive fallout. (Every home should have a fallout shelter.)
- 4. First aid and home emergency preparedness.
- Use of CONELRAD—640 or 1240 on the radio dial—for official information and direction.
- 5. Utilize Employee Publications and Organizations. Information regarding emergency preparedness techniques should be included as a regular department in employee publications and as a regular feature of employee meetings.
- 6. Tell Stockholders About the Company Disaster Program. Some companies have included information regarding the company civil defense plan in the regular quarterly and annual reports to stockholders, and have urged stockholders to cooperate with local government in serving as auxiliaries and in preparing their homes and families for disaster.
- 7. Tell the Public That You Have Made Plans for Wartime Emergency and Disaster Control in Your Company and In Each Plant. Industrial and business employers occupy a position of prestige and influence in



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A NATIONWIDE ORGANIZATION 155 Sixth Avenue, New York 13, N.Y. the community. If it is known that private industry and business are making plans for disaster, then individuals at home will be motivated to make like plans. Some companies have included information regarding their civil defense plans in advertisements, radio announcements and TV skits.

8. Support and Assist the Community Survival Planning Efforts. Many industrial and business executives are serving as volunteer civil defense directors, community industry defense coordinators, members of industry defense advisory committees, volunteer leaders of fire, rescue and police auxiliaries and reserve units. Some firms have sponsored specially prepared movies and publications as a means of furthering the objectives of emergency preparedness. Industrial executives can be of great assistance in developing the local "Operational Survival Plan" and encouraging employees to prepare their families and homes for civil defense.

CONCLUSION

These are, in the main, some of the important steps which must be taken by industry in order to survive an attack. Carrying out these steps will involve a number of complex problems. But none of the problems is as complex as the ones an unprepared American industry would face following a nuclear attack.

No one plan will fit all conditions. Too much emphasis cannot be given to the importance of basing the company disaster plans on the conditions and factors which make up the local situation. Industrial security directors and supervisors must recognize, therefore, that the steps and guides suggested here can only provide general assistance in planning, and that specific plans for each company and each plant must be built upon careful analysis of the local situation and upon the creativeness, imagination, and common sense of the local planners.

We must take steps now to protect the lives of employees, protect the plant property and preserve the corporate structure of each industrial firm as a means of insuring continuity of production and national survival. This kind of emergency disaster and control planning must be a normal part of the everyday activities of all industrial firms so long as we are faced with the threat of attack. When such plans are made at the workplace and coordinated with local government, we will have achieved a strong "built-in" community capability to deal with the unusual problems caused by enemy attack or other major disaster; and government leadership will have been strengthened to save life and property and insure the continuity of production and continuity of government.

Time is not unlimited. Each year, each month that passes without steps being taken to provide adequate non-military defense in industry and to insure the restoration and preservation of our national economy should attack occur, adds to the practical difficulty of achieving national security.

Make industrial security and emergency plans now. After the bombs fall it will be too late.

Role of Professional Security Director

(Continued from page 9)

a seek shelter plan. Establish a sabotage prevention system. Establish an espionage prevention system. Develop a plan for emergency protection from clandestine and unexploded ordnance, including disposal. Plan for continuity of each major function of company and plant. Plan for continuity of management. Develop a placement and transfer plan for effective utilization of employees in the emergency. Review corporate by-laws and administrative regulations. Establish emergency reporting points for employees. Establish alternate corporate and plant headquarters. Protect vital records by duplication and safe storage at alternate points. Develop emergency financial procedures. Develop plans for emergency repair and restoration of production. Deconcentrate critical production. Disperse new industrial plants. Prepare to assess and report the nature and extent of damage. Prepare and distribute disaster plan manuals and handbooks. Conduct exercises and drills. Train and educate.

The professional security official is in position to provide leadership and assistance in achieving the objectives of the National Plan for Civil Defense and Defense Mobilization by vigorously taking the above steps. He must bring the importance of disaster preparedness emphatically to management at all organizational levels. He must provide the initiative, leadership, direction and coordination in planning and preparing, and during emergencies he must serve as the emergency or disaster director for his company, or assist top company management by serving as coordinator of survival activities included in the company disaster plan and organization.

The articles in this issue of Industrial Security magazine will provide information and guidance to security officials in planning and organizing for disaster control, industry defense and survival.

The American Society for Industrial Security strongly supports the National Plan for Civil Defense and Defense Mobilization as developed by the Office of Civil and Defense Mobilization and promulgated by the President. Success in achieving the objectives of the National Program for Industrial Survival, (as described in this issue by Virgil L. Couch, Director of the OCDM Industry Office) depends on action by ASIS members—professional industrial security officials.

Take action now! After disaster strikes it will be too late!

ASIS Program for Emergency Control

(Continued from page 10)

other companies and industries are doing in the field of industrial disaster control and defense. This special issue of the magazine will serve also as a handbook, manual, and guide for industrial security directors and other industrial executives concerned with emergency and nonmilitary defense preparedness. It should be of special value to local government officials in providing stimulation and guidance to industry in preparing for industry defense.

 Notices of training programs and courses relating to industry defense and mobilization, industrial security, plant protection and industrial survival have been published in the ASIS Newsletter.

6. Each Chapter of the Society has been urged to: (1) appoint a Committee on Disaster and Emergency Preparedness; (2) include the subject of emergency and disaster planning on the program agenda for chapter meetings; (3) assist local government in developing and promoting programs of disaster control and industry defense by (a) serving on the staff of the local civil defense director, (b) serving on local civil defense industry advisory committees; (c) sponsoring one-day or two-day meetings and seminars in cooperation with local government for discussing nonmilitary defense methods and programs; (d) providing articles pertaining to industry defense for publication in Industrial Security magazine and (e) assisting in developing appropriate manuals and other publications relating to industrial disaster control and defense.

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All members are again urged to develop plans for industry defense and survival in their companies and agencies. All Chapters should provide active leadership in civil defense and mobilization planning by assisting and cooperating with State and local governments in developing and promoting industry defense programs in the communities in which they are located.

National survival of enemy attack could well depend on how well security directors do their job, both as individuals and as members of the national professional organization of ASIS, in providing support and assistance to the National Plan for Civil Defense and Defense Mobilization, and especially the National Program for Industrial Survival.

"Civil Defense is a vital personal concern of every individual in our state and to the security of our nation and the preservation of peace in the world. In the face of a thermonuclear attack, there would no longer be any real distinction between target and non-target areas."

GOV. NELSON A. ROCKEFELLER Governor of New York State

Sabotage and Espionage

(Continued from page 21)

he must not be permitted to fail; the future welfare of all of us depends upon him. It is to this end that American Society for Industrial Security was founded-and it is to this end that American Society for Industrial Security needs to be-and must be-aided and encouraged by all of industrial America and by the United States government.

4. Every company should institute the practice of conducting adequate pre-employment investigations of their job applicants. This is fundamental to good security and is the most important single practice of a security program; yet it costs little and returns substantial vields.

Employee security is the cornerstone of any sound security system; without it there is no security. You can build a cyclone type fence eight, or ten, or fifteen feet high around a plant, or government installation; employ a guard for every ten employees; fix guard stations and guard towers all over the place; secure the most modern and expensive automatic physical security equipment; but if you do not have an efficient and effective personnel security program you have a poor and ineffective security system. Notwithstanding this irrefutable fact, a great percent of the business firms and corporations in this country today still do not make pre-employment investigations.

The Communists are infiltrating industry by concealment of educational and employment backgrounds in order that they might do their master's work. When business does nothing to counter this tactic, it only lends aid and comfort to those who are dedicated to its down-

Reynolds Metals Company and its Industrial Security Division regard this as a primary defense and as a singularly good security practice. Espionage and Communist activity aside, looking only at the economics of the situation, it has been found that this device of pre-employment investigations serves to winnow out a sizeable portion of the persons seeking positions of trust and responsibility. Investigation will often reveal that the applicant has been untruthful about his background, education, employment history, compensation or some other major factor. Pre-employment investigations are a most effective and necessary cornerstone for any good security system in industry. When employees are honest and loval, employers need not have too much worry or concern about espionage or sabotage.

Espionage has played a vital role in keeping the U.S.S.R. abreast of the United States in scientific and technological fields. This has given the Soviets the opportunity, once they have acquired our basic secrets,

(Continued on page 142)

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Determining Vulnerability

(Continued from page 26)

inaugurating our records protection program, the first problem was deciding what to duplicate. This was resolved by conducting an inventory of every record in the bank and carefully reviewing each record to determine which would be absolutely necessary and vital to reconstruction.

Naturally, our next problem was how to carry on a records protection program that would be durable and economical,—how to duplicate, and how to disperse or store in vaults. We decided on microfilming as a means of duplication; however, this meant obtaining special equipment and special training of personnel.

Realizing that New York and its environs would always be considered a prime target, a remote rural area was considered necessary as a storage site. Underground, and aboveground possibilities were investigated. In the village of Granite Springs, Township of Somers, in Westchester County, just 55 miles from New York City, we found the kind of storage space we were looking for. The building itself is 80 feet wide, 400 feet long and constructed of fieldstone, with walls that are four feet thick. The aisles are 14 feet to 18 feet wide, providing ample and safe working space. Lying in a natural valley, not even the flagpole atop the tower can be seen from the highway approaches. The foundation was laid about 1900 and the building was intended as a plant for bottling unusually pure water of the area-a plan that was never realized.

To give you an over-all impression of this center, it is half the size of Madison Square Garden in New York. There are now three stand-by generators in its independent power plant; there is a separate Diesel water pump for a man-made reservoir of 350,000 gallons capacity in case of fire. The generators have actually been used as the result of severe storms knocking out the local electric supply. The roof of the vital records section has a water-sprinkler system for fire protection, and steel shutters on the windows.

A staff of 30 operate this installation. The supervisor and his wife live in a comfortable apartment within the building. The other employees are local people, commuting from Westchester County communities from Yonkers north. Unarmed porter-watchmen, reporting at 4:00 p.m. and at midnight, clear and patrol the premises. Thy also operate the incinerator to burn film that has been stored beyond our stipulated retention date, as determined by our legal department. Emergency food reserves, cots and blankets are stored in the center. Bottled water, regularly changed, is no problem because of the natural springs available. Arrangements are being completed with the local Red Cross and Civil Defense authorities for giving training to these people similar to that already given to our Head Office and branch personnel.

Microfilming is done each day in all our branches and at the Head Office. These films are stored in the main yault at the Head Office overnight and taken by couriers in a station wagon, to permit travel on the parkways, to the center the next morning. The trip from New York takes 1½ hours by car. The microfilm is processed the next day in our own laboratory. We also have sufficient equipment to make full size prints of any films or portion of films. From these we can reconstruct our paper records at any time.

Since opening the center, four tests have been conducted. The latest was a \$17,000,000 branch of our system, completely reconstructed and theoretically put back into business in seven business days by 15 clerks, other than those who regularly work in that particular branch. Instruction manuals for reconstructing each department and branch are on file at the center.

A constant two-way flow of information and material is maintained by both teletype and by couriers who make daily round trips from New York by car.

Requests from the Head Office and the branches result in approximately 19,000 references a month to the information stored at the Records Center. More than two miles of linear feet of microfilm are received, developed, viewed and filed every day.

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Preparedness is a by-word among the members of the staff. The immense amount of inflammable paper and film on file is safeguarded not only by around-the-clock patrol of the premises, but also by frequent fire drills in which the staff functions as three-person teams.

CONCLUSION

As a first step in disaster preparedness for emergency operations of our bank, we analyzed the vulnerability of each bank building to attack. Based on these studies, we are developing what we consider to be adequate measures to meet the hazards of wartime. It is this second step,—the development of disaster preparedness measures,—that is important. Study and analysis without action is useless.

Why not ask your banker whether he has taken steps to protect your account and to plan for civil defense and survival?

Effects of Attack by Nuclear Weapons

(Continued from page 15)

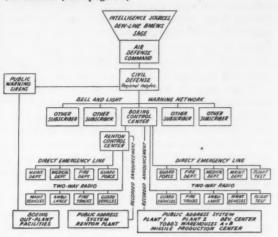
is acceptable as such threshold because such blast loading does not do structural damage but only fragments glass and other friable materials or displaces non-structural parts of the house in which we live and is preceded by a sudden warning burst of light, then is it not logical to arrive at similar thresholds of risk for thermal energy in calories per centimeter square and roentgens for prompt radiation and fallout radiation?

From such decisions one can proceed to improve his protection against any effect commensurate with economic feasibility. The decision on improved protection to his family and to himself is reached through the same rationalization by which one decides how much insurance he should carry on his life, on his house, on his automobile.

What can be done is a personal decision; but the direction in which to go is clear.

Alert Warning and Communication

(Continued from page 34)



Boeing Airplane Company communication channels for disseminating Civil Defense Alerts.

"In addition to the yellow alert, or evacuation warning, a red alert (seek cover) will be given through the City and County warning system some time after the yellow alert, but Boeing will not participate in this phase of the exercise.

"Objectives of Exercise:

"The purpose of the Boeing exercise is to:

- Remind all employees of the Boeing Civil Defense Plan as described in the booklet previously distributed to them.
- Focus their attention on the immediate problem of what specific action they would take if an evacuation warning was given.
- Provide line organizations which have direct civil defense and evacuation responsibilities with an opportunity to practice and review their assignments as set forth in the Company Civil Defense planning.
- Provide an opportunity for checking on the adequacy of the emergency communication system throughout the company's facilities.
- Give supervisors a chance to review their responsibilities and analyze any specific problems which may exist in their areas.
- 6. Test the 'Conelrad' alert procedures.
- Provide an opportunity to analyze the adequacy and effectiveness of the Boeing Civil Defense Plan in all its phases.

"All supervisors not assigned to a specific function will be reminded through 'Management Information' of the extent to which they are to participate; that they give careful consideration to the action they would take in event of a real alert, such as controlling personnel during an evacuation, coordinating with Medical, handling local shop emergencies, preparing their shops

for evacuation by shutting down machines, and taking special precautions to eliminate fire hazards.

"Employees will be advised of their participation in the 'Boeing News' and the public press.

"To obtain the results of the test a questionnaire has been prepared which will be completed by supervisors assigned to monitor the alert in their respective areas. Each of the organizations listed below will assign personnel in the various areas over which they have jurisdiction to monitor the alert system and complete the civil defense questionnaire. Where the organization has multiple areas, all areas under their jurisdiction should be covered."

In 1958 and 1959, Boeing professional security organizations participated in similar exercises. All phases of the exercise were performed, except that the warning records were not played over the public address system. During the April 17, 1959, National Exercise, the total elapsed time for notification of all personnel concerned and simulated playing of the warning record was three and one-half minutes.

Bell and Light alert received	8:31 1/2	a.m.
All warning notification completed	8:35	a.m.
Professional personnel reported		
assignments completed	8:45	a.m.
A fast communication system will	help save	lives.

Assessment and Reporting of Damage

(Continued from page 117)

and calculated fallout patterns to provide the earliest estimates of lost and surviving resources. If the basic records are reliable, a revised postattack census can be taken "by subtraction" in a matter of hours or days.

The preparation for such an event as nuclear attack against the U. S. is grim business. It is especially sobering to a people largely untouched by catastrophe. Our high standard of living has permitted only very limited contact with the problems of survival. Many individuals and corporations have refused to admit even the possibility of such a nuclear holocaust.

From time to time unpleasant events force the easy-going U. S. citizen to turn his attention from the peace-time pursuit of happiness to the fearsome, half-buried problems of nuclear attack. The realists who heed the warnings and who actually make substantial preparation for the worst, while hoping for the best, can take comfort from one optimistic thought: Their preparations to insure survival actually reduce the likelihood of attack.

An intelligent enemy is not likely to strike at a U. S. hardened and prepared to survive the worst. Under such circumstances, a ruthless but intelligent enemy would even be inclined to avoid dangerous local moves in the "cold" war. By contrast, a soft, unprepared U. S., incapable of survival and rapid recovery, presents a constant temptation to the unstable individuals who normally rise to the top posts of Government in an authoritarian system.

Planning Emergency Shutdown

(Continued from page 39)

 To ensure appropriate cooperative action by and with outside civic and governmental agencies.

Step one in the emergency planning is the appointment of a group to which organizing responsibility may be properly assigned. In our case, an "Advisory" and a "Work" committee were established by our Executive Safety Council. The Emergency Plan Director serves as chairman of both committees.

The Advisory Committee, consisting of management level supervisors, formulates policy and guides the activities of the Work Committee. Plant Protection, Maintenance, Power, Fire, and Safety Department supervisors serve on the Work Committee, which carries out day-to-day planning and development of the program within the broad policy framework.

As previously mentioned, our Midland Division Emergency Plan is broken down into six categories. Items #1 and #6 (Unit Emergency Plans and Hypothetical Emergencies) have been described. As briefly as possible, the other four categories are:

Emergency Services Plans—The Emergency Services Plans are developed by the departments which swing into action at the time of an emergency. The number of Services used and the extent to which they are utilized depends largely upon the severity of the emergency. This group of Emergency services include:

Public and
Industrial Relations
Fire Fighting
Plant Piping
Electrical
Demolition-Shoring
Transportation
Food Service
Public Relations
Medical
Plant Protection
Safety
Personnel
Food Service

The duties of these individual Services are obviously varied. It is particularly important, however, for each of the groups covered to have a carefully worked out plan in writing. In this way, the Work Committee can correlate necessary working relationships between the groups.

Communications — Dependable, fast communications are extremely important in defining the scope of a plant emergency, in establishing control measures, and in reducing the likelihood of panic on the part of personnel.

Our emergency communications revolve around three separate, but allied means of transmitting information:

- A. Short-wave radio.
- B. Emergency Telephone-Alert System.
- C. Building or Unit Emergency Alarm.

Evacuation—Evacuation has never been necessary other than on a localized basis, but we recognize that a traffic control plan is essential if any widespread evacuation is to be carried out safely and efficiently.

Major evacuation routes have been designated on copies of a plant outline map with lettered traffic control points indicated. The maps are distributed throughout the plant, and large evacuation signs have been posted along the designated plant roads. Proper education of plant personnel in evacuation procedures is also carried out in monthly safety meetings and in scheduled group meetings.

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Shelter areas in various buildings are also marked with appropriate signs.

Mobile Control Center—A mobile control center has been established, following our recognition of the need for a Field Headquarters at the scene of a major plant fire or emergency. This mobile unit serves as the hub of emergency operations and would be used only in case of a major disaster in which control and repair was stretched out over a considerable period of time.

This completes the description of the six major factors considered in establishing our Plant Emergency Plan.

It is our belief that with a well planned program, frequently rehearsed, the plant is less likely to encounter trouble; and if trouble does arise, we are better prepared to cope with the emergency.

Sabotage and Espionage

(Continued from page 139)

to outstrip us in some areas, through their dictatorship in all phases of their economy. Our record of positive action against this menace is lamentable and we *are not* doing our utmost to protect ourselves, our industry, or our nation from nefarious Soviet activities.

In this connection Mr. Hoover recently said:

"Public apathy is the sure way to national suicide—to death of individual freedom. It allowed the Communists to penetrate and make satellites of once-free countries, and it is presently enabling them to honeycomb and weaken the structures of the remaining countries, and there is today a terrifying apathy on the part of Americans toward the deadliest danger which this country has ever faced. Some of that apathy is deliberately induced. Those who try to minimize its danger are either uninformed or they have a deadly ax to grind."

We can prevent the spread of Soviet espionage activities in American industry and reduce this evil, foreigninspired, subversive practice in our ranks of government and industry. First, we—the American people—have to recognize the seriousness of the problem and then work together to defeat it. This, we must do to preserve our great industrial advantage, and indeed our very civilization.

". . . our civil defense measures for protecting our population and expediting recovery after a nuclear attack represent a vital element in our deterrent posture and deserve the most urgent attention."

GENERAL THOMAS S. POWER Commander in Chief of the Strategic Air Command

Inventory of Employee Skills

(Continued from page 41)

out-of-hour classes, etc., and so indicate which kind of courses they were. (For example: Electricity-adult education, Basic Math-Correspondence.)

 Languages. List any language other than English that you can speak, read, or write and indicate your proficiency in each such as slightly, moderately, fluently.

Ability to
Language Speak Read Write

- Hobbies. List all your hobbies, such as photography, radio construction and repair, television repair, woodworking, etc.
- Military Experience. If you have had military service, please indicate the branch of service and kind of experience, such as Navy-radar operator, Army-Medical Corp,
- Civil Defense Experience. If you have participated in Civil Defense in your Community, indicate the activities you were engaged in, such as First Aid, Demolition Squad, Warden, etc.
- Community Interest. Indicate any position or membership held in your home community, such as Mayor, Freeholder, Fire Marshal, Board of Education, etc.
- Company Clubs and Associations. Indicate the activities you have participated in and any offices you have held in intra-company clubs and associations.
- Other Organizations. Indicate the activities in which you have participated and the organization titles you have held

in fraternal, professional or civic organizations outside of

- 13. Other Personal Background. Please indicate any information about yourself that you feel should be included in your background history that is not covered elsewhere in this questionnaire or any special interests you have.
- 14. Comments and Recommendations. Include in this section, if you wish, comments on the merit of this project, the questionnaire format, additions or deletions you believe would improve the questionnaire, or anything you can think of that would increase the usefulness of the plan.

"If, despite our earnest efforts at the negotiating table and our defense preparations, we would nevertheless be subjected to nuclear attack, civil defense and measures for fallout protection offer the most practicable and feasible means of saving the greatest number of lives. Numerous studies have shown that such a program would give a substantial portion of our population an excellent chance of surviving and hence provide us the opportunity to continue the fight successfully. In other words, a capacity to retaliate will be reinforced by an effective capacity to survive. And only thus can our defense posture serve as a convincing deterrent."

CHRISTIAN A. HERTER
Secretary of State
(From the White House Conference on fallout protection, January 25, 1960)



Plant Police Services

(Continued from page 47)

an average age of 48 years is composed predominantly of relatively older men (men over 45) whereas a workforce that figures out to an average age of 42 years is composed predominantly of relatively younger men (men under 45).

No inference should be drawn, nor do we intend to imply, that the older group is any more or less efficient than the younger group. This method of estimating a situation is simply one of many.

I mentioned briefly above the phrase "and/or women," and, while most police forces are made up almost exclusively of men, the possibility that we will include women as a practical necessity to meet the need for numbers in any future emergency must not be overlooked. Some plants probably have matrons on their staff and, certainly, policewomen are common to the major cities. We have women in the Armed Forces in all branches, and there are numerous assignments which they can very competently fill in plant police services. Your planning should include them if at all possible.

The other and more traditional source of manpower is men over 45 years or men displaced from other jobs and not accepted by the Services.

Adequate shelter that has been constructed or adapted to meet specifications and that has provisions for personal needs, sleeping, food storage, food preparation and similar requirements should be provided for the plant police services or be so designated in the local plan that it is immediately available for ready access when the emergency occurs. This provision is necessary because this particular group will undoubtedly be requested to remain on site, and, in such event, they should be provided with every possible protection to insure their coming through in good shape. This will necessarily be a volunteer group. The volunteering should be done ahead of time and some type of morale-boosting factor should be part of the recruitment process to insure enough reliable volunteers to work the plan. Defections of personnel at the moment of crisis cannot readily be replaced. Equipment for an expanded department should be simple and inexpensive. A means of ready identification is probably all that is immediately necessary other than the ordinary clothes that the person would have at his workplace. If outside activities are or become necessary, some protection from inclement weather, such as raincoats, overcoats and overshoes must be considered. However, the principal item is that the extra members of an expanded department be readily identifiable, and this can be accomplished through low cost items, such as plastic helmets of a particular color, webbed shoulder belts such as those worn by school safety patrols, arm bands and similar devices. The arming of the group, if this is required, presents a particular problem, unless it has been or is the policy of the plant to arm their guards. If only a few weapons

are kept on the premises, one source that might be readily available is to borrow, rent or lease arms, such as rifles, shotguns and pistols, from employees who might be willing to make this equipment available. The purchase of pistols, rifles or shotguns in quantity from ordinary sources after an emergency is upon us would be practically impossible. The use of employee-owned equipment on a rented basis might present problems, as far as ammunition supply is concerned. The employee, from whom the weapon was obtained, would most likely be able to furnish some small amount of ammunition that would fit the firearm and could include it at the time of delivery.

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As far as police authority is concerned, it would be well to know the provisions of your local laws and statutes in regard to the protection of private property during an emergency and to enroll with the local units of civil defense. In the event of a major emergency, these local units would then become *the* local government, and your participating groups would then become a part of the local police services without question.

The main purpose of the plant police service is to preserve and protect both personnel and property. With a volunteer, protected group in place on premises which have escaped direct involvement, it should be possible to bring the plant and probably also the majority of the personnel through the emergency in very good shape. That fact should allow the plant to resume production almost immediately or to convert quickly to a more urgent requirement. Prompt recovery from disaster or attack is the purpose of all our planning and training, and that, in the end, will preserve and protect our way of life by producing the materials to do it.

Leadership Responsibility

(Continued from page 30)

- ning, organizing, training) stage and post-emergency (operations) stage. The necessity and justification for directive authority for the chief disaster control officer is greater in the latter stage.
- 6. Terminology describing the function varies: "Disaster Control"; "Defense"; "Emergency Planning." Differences in this terminology would seem to derive from whether a concern is willing to base the function principally on preparations to meet enemy attack or whether it wishes to emphasize preparations against "natural" disasters or large-scale industrial accidents. Is an optimum terminology possible, such as disaster defense? Terminology applied to the chief officer in charge of the function varies: "Coordinator"; "Officer"; or "Director"—connoting an increasing scale of authority.

Planning and Organizing

(Continued from page 44)

ENGINEERING—Municipal engineering groups and professional and technical societies can keep the head of the engineering service informed of the latest safety practices. Plant engineers, technicians, plumbers, electricians, millwrights can provide training in specific phases. Local police and fire departments can teach rescue. Other should be taught decontamination, poison gas detection, etc. Especially qualified members can teach others.

WELFARE—Local civil defense officials will supply information on approved procedures in helping disaster victims. The American Red Cross can also provide advice. Large-scale food preparation, under disaster conditions, can be discussed with the cafeteria manager, a local restaurant operator, or a caterer. Municipal transportation authorities, bus line operators, and cab owners can help with transportation problems.

WARDENS—As this service has no counterpart in a peacetime community organization, training can be based on civil defense handbooks, motion pictures, and classes conducted in the plant, or by local authorities. As wardens may be expected to assist other services, they should receive sufficient training for this responsibility.

RESCUE—This Service is different from the usual peacetime rescue group since it requires the movement of heavy obstacles and clearance of debris similar to the Engineering Service functions. Rescue Schools have been established by many local and state civil defense organizations. At least one person from each plant should attend a Rescue School and become qualified as an instructor in order to return and train rescue squads in the plant. At these schools, disaster and post-disaster conditions are simulated and rescue instructors learn by doing. In many instances local Police and Fire Departments are qualified to teach rescue.

RADIOLOGICAL MONITORING — Since this Service has no counterpart in peacetime, local government organization training must be obtained in special schools. The Office of Civil and Defense Mobilization conducts courses in training centers for radiological defense instructors at Manhattan Beach, New York; Battle Creek, Michigan and Alameda, California. The Atomic Energy Commission provides training at Oakridge, Tennessee and in cooperation with certain universities and colleges. Radiological monitoring information is available in a variety of civil defense handbooks and publications. Courses are conducted also by many state and local civil defense organizations.

COMMUNICATIONS AND CONTROL—Local civil defense offices, the telephone company, radio technicians and others concerned with public communication can provide guidance in developing the company communications and control system. Arrangements should be made to train messengers, install

loud speakers and provide other means of communications.

PLAN AND ORGANIZE FOR DISASTER NOW—The future survival of every industrial organization may depend on an effective plant emergency plan and trained plant personnel to cope with disaster at the workplace. Be prepared for self-help in time of national emergency. The time to prepare for the prevention of disastrous results and destruction is now—tomorrow may be too late.

Telling Employees About Plan

(Continued from page 78)

published monthly or quarterly and contain information on all phases of the emergency plan. Some examples of its contents are special activities of disaster workers, recent developments in the emergency plan, or pictures of shelters and equipment.

The graduates of all disaster training courses should not only have a competent knowledge of the course material, but also a thorough understanding of the entire emergency plan and how they and their new skills fit into it. To accomplish this, instructors should always attempt to tie in the course with the over-all plan. Arrange to have the plan coordinator or other key figure speak to each group during the last class session. He can answer any questions that may come up and lends prominence and importance to the course.

Another effective means of stimulating and retaining interest in the company's emergency plans is to make arrangements for the showing of disaster films. Your local Civil Defense Director has available or can obtain some very good movies dealing with disaster problems. He will be more than happy to get them to you. They can be shown during the lunch period, rest period, during committee or supervisory meetings, after working hours or at any other time that may best suit your particular needs. The American Red Cross also has first-aid films that can be borrowed for first-aid trainees.

Dozens of different pamphlets dealing with all phases of Civil Defense and disaster preparedness are available from OCDM and your local civil defense office.

Copies of such literature should be available to all employees. Distribution with the pay envelope, use of special racks, or handouts in the cafeteria lines are ways of getting this material into the employees' hands. A display of disaster equipment in the plant recreation room or in the control center is an additional method of fostering interest in the program.

Continued interest in disaster preparedness can be stimulated by encouraging and recognizing Civil Defense activities by the employees. Publicize outside achievements in your company magazines and newsletters. Assist the employees in getting their "own house in order." Meet with union representatives to discuss company and community emergency planning in an effort to gain their assistance and support; above

all, be sure that top company management is actively and wholeheartedly behind the emergency program.

There are many ways of telling our coworkers about the company's emergency plan. Because of organizational and physical differences, methods that work well in some companies may not be the right answer in others. The important point is to recognize that a definite plan is necessary if this selling job is to be effective. Work out a specific "advertising" campaign flexible enough to cover unusual and unforeseen circumstances, yet firm enough to avoid any appearance of haphazardness. Take advantage of ready-made lines of communication, taking care that the message being sent is worded for the best reception by the people for whom it is intended.

Civil Defense and disaster preparedness in industry is and will continue to be a self-help proposition. For any industrial complex to help itself, all the individuals that make up that complex must know what to do and how to do it. The apathy we encounter in disaster planning is made up of frustration and fear in the face of the unkown. If the American people understand the necessity and feasibility of Civil Defense, then participate directly and locally in positive steps to achieve it, the so-called apathy will be replaced by an effective disaster plan and the sense of security that goes with it.

Rescue Service

(Continued from page 52)

was held and a final briefing given to students before their departure for home.

Although the Rescue School at Olney has been closed, training is available to industrial rescue units at rescue schools which are conducted by state and local civil defense organizations.

The men who were trained as rescue instructors were from different departments such as the Safety, Fire and Mechanical Departments. A few were picked from the City of Weirton and from Hancock County so rescue courses would be possible not only in company plants but also for the civil defense organizations of the cities in Hancock county. During the time the group was taking the rescue courses, a meeting of the officials of the city of Weirton was called and it was explained to them exactly why the 12 people were attending the rescue school. The importance of the rescue service to the city and county was pointed out and the need for a truck fully equipped for rescue work was also outlined. The officials agreed to this purchase.

The next step was finding company people who would be eligible to take the rescue courses taught by the 12 men who went to Olney. The applicants were screened very carefully and only the most qualified persons were taken. The courses were so popular that it

was not possible to accommodate all who made application. Only people who had some previous experience in rescue work were chosen. Each person was required to take 20 hours of first aid and by the time half of the applicants completed their first aid courses, the new rescue truck arrived. These applicants took the rescue instructions first and the others followed. Some of the people who finished the rescue instructions then helped to instruct the other teams. There are now 20 eightman rescue teams in the county, all completely trained.

There are five volunteer fire departments in Hancock County. One team from each volunteer department received instructions. Three of the departments were so impressed with the courses that, at their own expense, they bought big panel trucks and equipped them with all the necessary tools to make an excellent rescue truck for themselves. They have been helping to train civil defense organizations throughout the county. People from our service organizations—two teams from the VFW and two teams from the American Legion—also received instructions. Demonstrations were given to other civic organizations such as P.T.A. groups and the Junior Women's Club.

This helped encourage members of these groups to take a greater interest in civil defense and many of them enrolled in various phases of civil defense work in the county.

At the request of the West Virginia State Director of Civil Defense, the rescue truck and two instructors traveled to several cities in the State and gave demonstrations of the equipment and how to handle it for rescue work. That helped the State Director to encourage other cities to buy rescue equipment. The State Fire Marshal has used the rescue truck and some of the instructors at the summer fire school at West Virginia University. This has encouraged a number of volunteer fire departments to incorporate rescue in their fire fighting.

Most of the people picked for the rescue courses in Weirton Steel plants had received some previous training from the Safety Department, and this training was incorporated in the rescue courses. They had been taught how to handle all types of first-aid equipment and how to take care of equipment throughout the plants. This provided a nucleus for in-plant rescue teams.

The responsibility of all civil defense and plant security throughout the Weirton Steel Company was placed upon the managers of the plants and their safety managers, who coordinated through channels to the vice president of operations.

The company feels that the excellent training the employees received from the Safety Department, combined with the rescue and fire departments and security measures, has helped to inspire them to accept their responsibility to their company, fellow workers and government to be prepared to deal with any disaster or emergency.

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The Plant Welfare Program

(Continued from page 56)

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and at work. Consequently, we have established Personnel Reporting Centers with assigned personnel to man them; we have planned evacuation procedures with designated shelter areas at all locations, we have established a communications network for keeping employees informed; and means of transferring funds to meet requirements have been investigated.

- 3. Emergency Services-As a first line of defense in coping with the initial emergency, emergency services have been developed. These services are geared to accommodate plant and fire protection, provide vital services and supplies, establish emergency alert systems tied in with local Civil Defense and maintain a vast communications network. At Corporate Headquarters alone, for example, more than 200 qualified first-aid personnel have been trained, approximately 1 out of every 5 personnel. All areas have been supplied with medical and nursing supplies. Volunteer fire brigades have been trained at all plant locations. Battery-operated radios have been furnished for Conelrad reception. And, not least of all, emergency alert systems have been established at all locations.
- Vital Records—Provision has been made at every location for the storing of vital records at offsite locations.
- Continuity of Production—This area is especially difficult because it depends upon what is practical

- at a particular time or within a particular locality. Obviously, consideration has been given to the alternate location of a facility or office and the need for continuing operations which are vital to the country.
- 6. Reporting—The basic objective in this area of our program is to spell out the need for obtaining information as soon as it becomes available and passing this information forward to the appropriate people. The types of information which might be required are listed, as well as an outline of who would report to whom. Briefly, the information desired ranges from the condition of our employees, their families, their homes, to the Corporation and Community as a whole. The major objective is to achieve every possible help for every IBM employee who may need it.

CONCLUSION

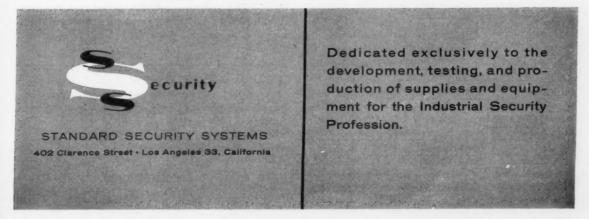
In the last decade, the United States has spent some \$400 billion for military defense, we have entered into a number of mutual security pacts and other alliances, and we have been alert to the fact that a strong defense is our best insurance against aggression.

It is well known that modern technology has made available an almost unlimited explosive power and has reduced the world's geography to a matter of but minutes of time. It is far less known, it seems, that an adequate civil defense is essential today, that we must not only attune our thinking to the new conditions of our times but also marshall whatever resources are necessary to meeting the challenges before us.

THE Industrial Security Professions first specialized source of products and equipment delivered "off the shelf" that were formerly available only through "Special Order" purchasing.

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SEND FOR YOUR FREE CATALOG ON YOUR LETTERHEAD



Wardens in Industrial Plants

(Continued from page 59)

The presentation portion of the trainer's guide contains a topical outline of the lecture material and is printed in large, bold type. It can be used easily and unobstrusively by the trainer to cue himself in a semi-darkened room.

The objective of the presentation is three-fold: (1) to develop an understanding of the nature and scope of hazards created by an H-bomb explosion, (2) to provide trainees with knowledge of the basic principles of survival, and (3) to increase their chances of surviving a thermonuclear attack.

Once the presentation is on its way, the trainer confidently displays an interspersed combination of handouts, slides, tape recordings, and posters for a total of thirty audio and visual aids. The slides illustrate, among other things, the relative sizes of fireballs and damaging effects of 20 kilotron, 1 megaton, and 20 megaton bombs; the shielding effects of lead, steel, brick-concrete, earth, water, and wood; the effects of light, heat, blast, and radiation; fallout pattern; family plans; and home protection. The tape recordings permit the trainees to hear the siren, electric horn, and outside air horn "alert" and "take cover" signals.

Over a long period of time, this presentation has proved successful in conveying the nature of the danger and means of survival to more than 1500 supervisors. As one trainee put it, "The sight and hearing of the person who doesn't get the message are not of the best."

Dealing with emergencies of any kind is a normal supervisory responsibility. When industrial defense responsibilities are added, we accomplish our objectives through maximum use of the existing administrative and organizational structure of the company. In this way, we gain the direct support of group and division management and eliminate the costly and, sometimes, unwieldy warden superstructure.

Additionally, by shifting industrial defense responsibilities from wardens to supervisors, we feel we are able to get closer to the employees. After all, supervisors are responsible for employee's work activities and are in daily contact with them. Thus the eyes and

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Civil Defense warden organization chart.

ears of employees are constantly available to supervisors without a distracting or superfluous intermediary. In

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For the present, at least, we regard our supervisory industrial defense system as the most logical and economical approach to the industrial defense problem. We have not, however, closed our minds on the subject. Future events and circumstances may alter our requirements.

In short, the Hughes Aircraft Company industrial defense and disaster control program, based upon the National Plan for Civil Defense and Defense Mobilization and the Armed Forces Industrial Defense and Security Regulations, is designed to safeguard company personnel, property, and information, in the event of natural or war-caused disasters.

Since Hughes Aircraft Company plants are dispersed throughout Southern California and Arizona, corporate management has placed emergency, disaster control, and industrial defense responsibilities upon plant managers, supervisors, and plant security organizations located at each of the dispersed facilities. They are responsible for coordinating, establishing, implementing, and monitoring plant industrial defense plans in consonance with directives and security functional procedures issued by corporate security.

Plant industrial defense plans include but are not limited to: Plant warning and communications system operated on a 24-hour basis, action procedures for employees to follow under disaster and alert conditions, employees' disaster assignments, service departments' disaster relief and control responsibilities, employee self-help educational and family plans, evacuation drills, emergency shutdown procedures, protection of essential industrial records and documents, emergency repair and restoration, and liaison with local civil defense authorities.

Plants' administrative and supervisory structures are utilized to the maximum in planning, organizing, and staffing the industrial defense program. Plans are coordinated with local civil defense authorities.

In addition to framing and promoting the companywide industrial defense and disaster control program, Security-General Office, on a continuing basis, evaluates the program, monitors the plant industrial defense plans, offers guidance, prepares educational material, coordinates disaster control activities, and maintains liaison with Federal, State, and local civil defense authorities.

"From my observation, the National Plan for Civil Defense and Defense Mobilization appears adequate and should certainly provide a basis for effective non-military defense actions. In addition, I have had my staff take a careful look at the Plan and they, too, confirm its completeness."

GENERAL E. E. PARTRIDGE Commander-in-Chief, North American Defense Command (From a letter to Director Hoegh)

Industrial Mutual Aid

(Continued from page 99)

Summary—It is generally concluded that the press and radio in the performance of their normal functions have need for and should get factual information regarding incidents of an unusual nature which occur in the plants of the area.

Special Services Committee—The Special Services Committee serves as an organizational and liaison medium for those agencies that are willing to supply their services in the event of an emergency. These agencies may or may not be associate members of the council. It was felt that they should be a part of a definite committee and thus have representation at Board of Directors' meetings through their own chairman.

Groups that are eligible for this committee can include the Industrial Nurses Association, American Red Cross, Civil Defense Directors, State Fire Marshal, Fire Fighters Association, the Council of Hospitals, the local hospital administrators association, ambulance services, and the local medical association.

Among the objectives of this committee are the following:

- Assistance in establishing a fire department mutual aid plan.
- Assistance in developing a cooperative plan to make maximum use of industrial nurses and medical staff when needed.
- Learn and encourage development of hospital emergency plans as related to potential maximum need.
- Assist in developing plans for mobilization and most effective usage of available ambulance and rescue services.
- Establish a practical working relationship between state and local civil defense.
- Establish a practical working relationship with the American Red Cross.

The Special Services Committee can be divided into two groups: The Fire Protection Committee and the Medical and Welfare Committee.

The Fire Protection Committee will concentrate its efforts towards establishing a better mutual aid relationship with the municipal fire departments. Information of interest to the plant or municipal fire departments will be disseminated through this committee.

The Medical and Welfare Committee will work closely with the medical, hospital, ambulance, and industrial nurses groups to insure a better understanding of the problems.

Program Committee—The Program Committee can develop the plan whereby logical groups of members, such as chemical plants, refineries and bulk stations, utilities, and general manufacturing companies can be arranged into units each of which is made responsible for a scheduled monthly meeting program. This ar-

rangement, coupled with that of assigning a program to the respective committees of the council, can provide a very satisfactory basic structure of programs for the council.

Special programs include informative speeches on:

Industrial Disaster Planning
Red Cross Disaster Plan and Services
Civil Defense Programs
Local Fire and Police Problems
State Road Development Projects
Medical and Hospital Emergency Plans

Importance of Testing—Once the plans have been written, it is necessary that they be tested periodically and establish set patterns for operation. The initial tests of the plans should be very simple with the idea in mind of executing more complicated exercises as the personnel become more proficient. The more detailed test exercises would bring to light weaknesses in the plans and point up areas where refinements would be needed. As refinements are incorporated into the plans, additional tests are needed to school emergency personnel in the revised procedures.

NOTE: The information contained in this article has been compiled from the following Kanawha Valley Industrial Emergency Planning Council manuals: The Kanawha Valley Industrial Emergency Plan, Emergency Traffic Diversion Plan for the Charleston Area and Greater Kanawha Valley, First National Industrial Mutual Aid Seminar, KVIEPC Mutual Aid Program, and KVIEPC Communications Manual.

Planning for Emergency Repair

(Continued from page 112)

spare protection channels which automatically back up important microwave and coaxial systems, and spare equipment ready for quick replacement duty all play their part in maintaining continuity of service and rapid restoration of facilities.

Engineering has for its principal objective the incorporation of service protection in the normal construction program and in current operations. This will constantly improve the strength and dependability of the phone system with respect to its functioning under disaster conditions.

Restoration requires teamwork and this spells plenty of trained manpower, materials and coordination. It also includes working together as a team with other common carriers when disaster strikes.

Plant Department manpower is trained to do the most efficient day-to-day job with the best equipment available. The chain of command meeting best the normal business requirements, easily gears itself to the rushed tempo of emergency situations. This group, running a "taut ship" is a particularly valuable group which performs a special coordinating function by summarizing damage conditions and expediting the necessary repair and restoration needs.



An emergency administrative operating center at American Telephone and Telegraph Company Headquarters in New York.

The Traffic Department control group mobilizes to handle swelling traffic volumes and maintains a continuing balance between shifting traffic loads and available circuits.

The Commercial People are always alert to meet the customers' needs, particularly in an emergency.

Accounting People assist the field in charging time and expense to proper accounts, and render assistance in financial matters.

The Public Relations Department assumes its role of keeping the public and officials informed of restoration progress.

Orderly and rapid Repair and Restoration are usually the result of a minimum departure from regular established channels and procedures—a built-in reserve and strength to meet any challenge, any disaster, however great.

Planning Guide—Through the joint efforts of all the operating departments, a Planning Guide was developed. This is not static. It is a continuing effort based upon the principles of sound planning as an implementation of the protection program. It is usually referred to as the "C. S. and R. Plans" or "Continuity of Service and Restoration Plans." These plans may be divided into three steps as follows:

- Step 1—The provision of facilities prior to a disaster to insure the continuity of, or permit restoration of, highly essential service.
- Step 2—The expansion, on a purely restoration basis within a few hours after a disaster, of the service provided in Step 1 by temporary arrangements to permit handling of all essential services plus some expansion of facilities for message service to the general public.
- Step 3—The provision of adequate facilities over a period of several days or weeks, on a temporary basis, to permit the handling of all traffic offered.

Yes—everything humanly possible is done "Ahead of Trouble." But when disaster strikes we rebuild as the occasion demands, and with a capacity which only a nationwide organization like the Bell System can possess. At the heart of this is a tradition—a top priority over all else—to maintain and restore communications as fast as our recuperative power enables us to act.

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The Corporate and Disaster Plan Manuals

(Continued from page 119)

heavy snowfall, can seriously disrupt production schedules unless by advance planning you can offset the complications imposed when employees are unable to leave the plant, or to report for work. And again, simply because your plant is not situated in or near the tornado belt is no assurance you cannot be struck by a tornado or a freak windstorm. I cannot overemphasize, therefore, the importance of preparing for all types of emergencies and disasters and including appropriate information on each in your disaster plan manual.

The General Electric Emergency Manual—In November 1959 we initiated the development of our revised "Plant Emergency Manual" by issuance of a general outline and index, together with a section on "Administration" covering six different types of emergency situations. Our objective was to develop a comprehensive, yet simple and easily-understood manual covering all types of disasters to which we could be vulnerable. The plans which we have developed are: Plan A—Strike and/or riot; Plan B—High wind and tornado; Plan C—Flood, rainstorm or snowstorm; Plan D—Fire and explosion; Plan E—Sabotage and espionage; Plan F—Enemy attack.

Our manual is contained in a three-ring, looseleaf binder with a red, plastic cover. It can be easily revised, quickly referred to, and easily spotted on the book shelf or among other publications.

The classification of subject matter is simple. Our Plant Emergency Manual contains four basic divisions, namely, Organization, Operations, Testing and Liaison. Organization—describes the structure of the organization along with the titles and names of the occupants of each emergency assignment. It lists the staff consisting of the Plant Emergency Administrator, the Section Directors for: Health and Medical, Welfare, Engineering, Plant Protection, Communications, and Warden Service. Suboperations are also included. The Emergency Management Advisory Committee is named. This committee is made up of the executives of the plant, including the General Manager, Department Managers, USAF Plant Representative, and Managers of Legal, Finance, Plant Facilities and Plant Security sections. They will be remotely located and will advise the Plant Emergency Staff and appropriately delegate authority when requested to take unusual emergency actions.

Operations—Contains six separate plans with general instructions for the activation and implementation of

emergency procedures. A chain of command for direction and command to initiate the individual plans is designated. Included also are the general alerting procedures for emergency personnel and the designation of assembly points.

Testing—Outlines the need and procedure for periodically checking and testing the plant emergency plans.

Liaison—Contains statements regarding relationships

and agreements with the local Medical Aid and Civil Defense organizations, and describes nature and extent

of Company participation.

Executives of the company have been provided with copies of the manual, and all employees are being informed and educated in disaster procedures. We feel that it is vitally important that all our employees be familiar with our plant disaster plan and program. Much has been accomplished by distribution of single-sheet newsletters containing basic information regarding the plan. In this newsletter we have included also tips on firefighting, first aid, and other items pertaining to civil defense in the home. In our experience this has done much to achieve acceptance of the emergency plan at the workplace. Unquestionably, each employee must be prepared for disaster at home as well as at the workplace.

I have attempted to outline the necessity of putting your disaster plan in writing,—a disaster plan manual of instructions and procedures. Developing a plan is of primary importance. Documenting the plan goes hand-in-hand with the planning process. However, action in emergencies will depend largely on how well you have organized, trained, and equipped your emergency and disaster control teams.

No one type of manual will fit the needs of all emergency plans. Unquestionably, experience in using your disaster plan manual will dictate the need for continuous adjustments in your system of issuing instructions and providing information. Development and issuance of the disaster plan manual is an important step in preparing for industry defense and survival.

University Training in Defense

(Continued from page 129)

associations which the School has formed with people engaged in the industrial disaster control and defense field in industry, private organizations, and government. For example, as a result of its proximity to the Operational Headquarters of the Office of Civil and Defense Mobilization at Battle Creek, the School has easy access to and the cooperation of OCDM officials in obtaining information for use in our program.

Projects for the immediate future include:

 Further development on a selective basis of civil defense subject matter in our other law enforcement administration courses. Conversations are now in progress on this between our faculty and various government and law enforcement officials.

- 2. Study by a faculty committee of the possibility of a special course which will permit treatment in greater detail and depth of the industrial defense and disaster control subject matter now being treated in our Industrial Security Administration course, and possibly a special course expanding on the civil defense subject matter under consideration for our other law enforcement administration courses.
- Testing the feasibility of the proposed university center described above.

In addition to these projects for the immediate future. the School sees opportunities for service by some such institution as the proposed center as a focal point of contact between curriculum development requirements in various schools and informational resources in research organizations, government agencies, and the like. A few examples will illustrate the range which these requirements may span. The whole field of "defense mobilization" (e.g., production controls, economic stabilization, resources management, etc.) poses problems eligible for consideration in courses in business administration, war economics, and the like. Nonmilitary defense is coming to be recognized as an appropriate field of study in Defense Policies Studies programs now in progress at various universities, including M.S.U. The impact of the nonmilitary defense program on government administration at all levels, now recognized in some textbooks, calls for assessment for appropriate treatment in the curriculum in Government and Political Science. Shelter and protective construction problems are beginning to be recognized in schools of architecture and engineering. Other examples could be cited.

The above discussion suffices to make the point that our School has caught tantalizing glimpses of an exciting vista wherein a few universities, each exploiting its special capabilities, can root in the higher education system of this country the curricula necessary to give key clienteles both pre-service and in-service training for the problems posed by a civilization that has increased its capability for achieving large-scale disasters, including but not limited to nuclear war. While Government can and should do much of the job, it cannot do the whole job. Much must be done in the private, nongovernmental sector. The universities have great capabilities for providing a large share of the leadership needed in the non-governmental sphere if they can but mobilize or put priorities on the resources adequate to the task. It is here that the felt needs of the practitioners can be of assistance if they are articulated. The ASIS, through its journal, conventions, and chapter activities, serves as an important means of communication between the practitioners on the one hand and the university teachers and administrators on the other. We at the M.S.U. School of Police Administration and Public Safety would be glad to have letters from readers concerning their reactions, either pro or con, to the developments and ideas which I have described.

Industry Defense Preparedness

(Continued from page 121)

in with their equipment to push the fire back to its heart and eventually extinguish it.

- 7. Improvements made in the electrical system to improve it and relocate key portions away from process and storage areas were an important factor in keeping electrical loss to a minimum and in so quickly restoring power to all plant areas and resuming operations so promptly.
- 8. The Plant Disaster Control Plan functioned in an outstanding manner. Employees were evacuated quickly without injury and no loss of life. Fire containment and control action were started promptly and, as previously outlined, were most effective. Start of repair and rehabilitation was prompt. Plant production was resumed with almost phenomenal speed in light of the damage suffered.
- 9. The Brooke County, West Virginia, Disaster Control and Mutual Aid Plan functioned in an outstanding manner. Thirty ambulances rushed promptly to the plant. Eighteen outside fire companies responded to the alarm. As all of these companies had previously visited and inspected the plant they were acquainted with its layout and its hazards. Their help in fighting the fire was most effective because of this previous planning.

In the replacement and rehabilitation work necessary to repair fire damage, these actions were taken to improve still further the safety and protection of the plant:

- All five process tanks located alongside the chemical distillation unit were relocated to a safer area into other process tank farms. These process tank farms were provided with foam-fog protection.
- As alternate locations are made available other process tankage will be removed from the area. Relocated tanks will be either underground or provided with foam-fog protection.
- 3. In replacing corrugated sheet walls throughout the fire damaged area, concrete block or brick were used for the first 9 feet above ground level, and a corrugated metal, insulated, panel-type construction was used above the 9 foot level for side walls. Roofs were replaced with this same panel-

- type construction where insulation was desirable in the roof area.
- 4. The asbestos sheeting on the chemical distillation building was replaced with the type of construction outlined above. Large chunks of this sheeting flew out of this building during the fire with almost explosive violence. Several of these chunks were large enough that if they had hit a fireman fighting the fire they would have seriously injured or killed him.
- 5. Steel work was concreted for a height of 10 feet from the ground on all pipe racks and tank supports. Where exposed, load-bearing steel work extends above this level, each individual situation was reviewed to determine if concrete or insulation protection should be given to heights above 10 feet.
- Foam lines were either placed underground or insulated to provide protection against fire and insure functioning in event of fire. Process piping was treated in the same manner where practical to do so.

We believe we received a most liberal dividend for all the time, effort, and cost we have devoted to Industry Defense Preparedness planning. The fact that all employees in the plant at the time of the fire were evacuated without loss of life or injury was a generous dividend for all our planning, cost, and effort.

But in addition to no loss of life or injury, planning for Industry Defense Preparedness gave us these other benefits:

 Damage from a fire which could have destroyed a twenty million dollar plant was limited to one and one-quarter million dollars.

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- Outstanding and effective assistance and cooperation was received from our industrial neighbors, surrounding municipalities, and the county in which our plant was located—Industrial Mutual Aid
- The fire was effectively and quickly brought under control.
- 4. No major production equipment was damaged.
- 5. Production was quickly resumed.

Disaster is never welcome, but when it does strike, advance Industry Defense planning can pay the most satisfying dividends, even in peacetime emergencies.

"The evidence is overwhelming that the Soviets intend to use nuclear blackmail as a major weapon to promote their objectives—namely to spread Communism throughout the world. If due either to any weakening of our defenses or due to any failure to maintain our retaliatory power, we render ourselves susceptible to such nuclear blackmail, the security of this country and of the Free World would be gravely compromised."

ALLEN DULLES
Director of the Central Intelligence
Agency



It pays to let Burns mind your business

Burns lowers security costs. We give you more professional protection, including the use of electronic equipment where feasible, for fewer dollars. All guard necessities, such as uniforms and sidearms, and such fringe costs as social security, vacations, overtime are included in a complete package. That means a 20% or more saving.

Burns frees administrative time. Plant protection is our basic business... but not yours. A Burns contract guard force frees time for important business *planning* and leaves business *protection* to a professional staff.

Burns Guards are thoroughly trained. Every Burns Guard knows: first aid, fire prevention, intruder apprehension, daily log maintenance, time clock supervision, parking lot direction, reception procedures and patrol methods. And each Burns force is under round-the-clock supervision, thereby relieving you of the responsibility.

Burns analyzes changing needs. Because security is our business, Burns constantly reevaluates your position to keep you alerted. And, with Burns, you gain the positive manpower flexibility so important to sound security.

Burns enforces rules objectively. It is our job to recognize and report infringements of your company procedures. Because we are "outside" security, there is no fraternization and rules are enforced to the letter.

Burns ends absentee problems. If a guard cannot show up, Burns will replace him, thus continuing your protection unbroken. This also works another way. If you have a temporary—or permanent—need for more guards, they will be supplied immediately.

Whether you're in banking or ballistics... whether you're a brewer or baker, Burns can protect your business...at a 20% or more saving. Incidentally, a lot of our clients are handling classified U. S. Government contracts.

Let us show you how Burns Guards can improve your security system while they save you money. Phone, write or wire and a Burns Security Specialist will be at your service. No obligation. Meanwhile send for our informative brochure, "It takes more than fences."

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